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SOME PRINCIPLES OF REFORM IN MEDICAL EDUCATION

BY

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The recasting of medical education, having been a topic of recurrent discussion for many years, begins to show signs of becoming a subject of action, and the two reports recently issued by committees of the Royal College of Physicians on social and on psychological medicine lay down lines of reform that seem expedient to some of our number. It is probably reasonable to assume that the two reports are but the heralds of comparable recommendations in respect of other branches of medicine, and there are signs that the specialists will shortly be on the march at the head of thousands of words, determined to bend the medical student to their will.

The Need for Revision

Few would deny that the methods and content of our present teaching call urgently for revision, but if we were to ask at large, "What are the important defects in the educational diet we provide for the medical student?" we should probably get as many and as diverse answers as there are special aspects of medicine, though we dare not be so sanguine as to anticipate that many of these answers would be the fruit of general ideas on the subject, or that they would dive beneath the surface of the obvious symptoms in search of fundamental faults. We should probably be assured on almost all hands that the student must know more about most of the special branches, and must acquire familiarity with more, and more complex, techniques.

That this is no wild surmise is plainly exemplified in the report on psychological medicine already referred to. This suggests a fully detailed syllabus comprised as follows:

During the Preclinical Years

12 to 20 lectures on normal psychology.

Visits to schools, courts, and factories.

During the Clinical Years

6 introductory lectures on clinical psychology and psychiatry.

53 further lectures and demonstrations on specified aspects of the subject.

Seminars and discussion groups covering the whole field.

Three months' clinical clerking to an in- and out-patient psychiatric department of the hospital.

A short term of undergraduate residence in a mental hospital, or, alternatively, a clinical clerkship in a mental observation ward.

A series of domiciliary visits with a psychiatric social worker.

Finally, a special qualifying examination comprising written, clinical, and oral parts.

The avowed object of this course is "to produce a sound general practitioner and not a specialist in psychological medicine"; but it is admitted that "the proposed syllabus makes demands for a greater share of the time of the medical student."

On the whole, the report on social and preventive medicine is less concerned to formulate an ambitious syllabus, and more interested in a reorientation of some of the teaching in already accepted items of medical training. It is content with a modest allowance of 18 to 20 hours in lectures, and does not demand the 70 or more hours deemed essential by the psychiatrists for their subject. Yet the report states, "Even so, the curriculum proposed will make further demands on the time of the medical student which can only be met by modification of some other part of the curriculum." It adds later, "The course in preventive and social medicine, as in the clinical subjects, *should become a curriculum.*"

Here we see both reports demanding for their special branches of medicine more time and labour from the medical student, and the casual recognition by one only of them that this is to be made possible by the pruning of "some other part" of the curriculum. To anyone who can read the omens it is clear which way the wind of reform is going to blow. More and more is to be expected of the medical student; no one gives serious thought to assessing the burden he can reasonably be expected to bear, but each branch of medicine vaguely cherishes the fond hope that some other branch will be ready to make the sacrifices essential to the fulfilment of its sectional ambitions, and to the adoption of its private curriculum. Yet if sectional interests are to be given a free hand, and if we concentrate excessively upon partial aspects of medical education, we shall never achieve a rational educational plan, and the student of the future may well find himself crushed beneath an intolerable burden of uncoordinated syllabuses, private curricula, and easy counsels of perfection.

However, it must be said that quite another view of these reports has been expressed (*vide* Lord Moran, *Times*, Nov. 3, 1943), to the effect that they do not propose "to add a new set of facts that the student must try to remember. They are merely intended to foster a habit of mind, a way of looking at things." No one who has studied these reports and done justice to their diverse merits can possibly accept this gloss, for both of them explicitly propose to lay fresh burdens of factual knowledge upon the student—one of them to a quite extravagant extent. Therefore, if the point of view embodied in these proposals prevails, a medical course will become a long and arduous sentence, and one to which few prudent parents will wish to submit their sons or daughters, and which still fewer schoolmasters than at present will care to recommend to their brighter pupils.

It is hard to believe that this is the way of wisdom or of sound reform. It seems to confuse instruction with education, shows little psychological insight into the methods and purposes of education in the true sense, and does not pause to ask the important question of what, in general terms, we wish the finished product of a medical training to be capable. The formulating of a final aim is a necessary preliminary to any scheme of educational reform. Only when we have decided upon this aim can we proceed to draw up the plans necessary to its attainment, having in view the time and the resources available.

If we have in fact reached a wide agreement as to the necessity for change it is because we have been forced to admit defects in the methods and content of our present teaching. Yet we have to bear in mind that as these defects first come to notice they may be but symptoms of more deeply seated disorders inherent in our present methods. If this is so, we shall do no good by patching up and adding to an unsound structure; we must rebuild from the foundations up. To do this we must undertake a thorough and critical analysis of

such defects as have come to notice, for unless we do so we shall find ourselves attempting treatment without adequate diagnosis: a type of enterprise not wholly unfamiliar to us in clinical medicine.

A Criticism of Achievement and Outlook

A critical survey of the house of medicine to-day shows that it is far indeed from being in order. Not the greatest and most justified enthusiasm for recent advances in knowledge, or for the alleviations of human suffering we have seen in our time, can blind us to the existence of many grave deficiencies in our achievements and outlook. We talk very facilely about the science and art of medicine, but it may be argued that the "science of medicine" is still a somewhat shadowy conception. From time to time this has been pointed out to us by one or other of those rare philosophers who have found themselves in our ranks, but the thought has been too unwelcome for us to listen to those who remind us. Allbutt, Mercier, and more recently Crookshank have all drawn attention to the unsatisfactory state of our science and its neglect of a rational use of language. Thus, says Crookshank, "although the Art of Medicine has been greatly advanced, in many respects, during the last century: although the Practitioners of that Art do freely draw upon the vast store-house of facts called scientific, to the great benefit of suffering humanity: and although all medical men have some acquaintance with certain sciences of which the province is in part conterminous with that of the Art of Medicine, there is to-day no longer any Science of Medicine in the formal sense. It is true that observation and thought have led medical men to form generalizations which have obtained acceptance; but there is no longer any organized or systematized *corpus*, or formulated theory, which can be held to constitute the Science of Medicine, and (in a now obsolete terminology) to form an integral part of Natural Philosophy. . . . Her Professors and Doctors decline to define fundamentals or to state first principles, and they refuse to consider, in express terms, the relations between Things, Thoughts, and Words involved in their communications to others."*

Again, "though we accumulate what we call 'facts' or records of facts without number, in no current textbook is any attempt made to define what is meant by 'a disease.' . . . In a word, no attempt is made to distinguish between what we observe in persons who are ill, on the one hand, and the general notions we form in respect of like illnesses in different persons . . . in hospital jargon, 'diseases' are 'morbid entities,' and medical students fondly believe that these 'entities' somehow exist *in rebus Naturae* and were discovered by their teachers much as was America by Columbus."

Precision in Language and Thinking

This fallacy of "misplaced concreteness" infests medical writing and leads even in the most distinguished hands to shocking confusion of thought. Two examples of this are cited in the paper from which the foregoing excerpts are taken—namely, the statement that "lethargic encephalitis is altering its biological properties" and that "a disease is only revealed by the symptoms it produces." Yet the two terms "lethargic encephalitis" and "a disease" are no more than general notions or abstractions, and abstractions have no biological properties and can "produce" nothing. It is a human weakness to hypostatize abstractions—often a pardonable and harmless weakness; but that at the fountain-head of medical thought and teaching we should find this grotesque confusion of thought and language, this failure to distinguish between thoughts, words, and things, is an indictment of the state of our science.

It is surely impossible that we should forge generalizations and propound first principles until we have given precision to our language and thinking. Sir Almroth Wright has recently commented pungently upon the poverty of our terminology; but even the most adequate terminology needs to be used in a framework of rational language if it is not to add to our confusion.

* *The Importance of a Theory of Signs and a Critique of Language in the Study of Medicine*, by F. G. Crookshank; being Supplement II in *The Meaning of Meaning*, by C. K. Ogden and I. A. Richards. Kegan Paul and Co., 1936.

At this stage in my thesis it is certain that I shall begin to meet with objections. That familiar phenomenon the successful and euphoric individual who flatters himself that he is a hard-headed and practical man will make his usual and instinctive protest against the use of the intellect by saying that all this talk of language is but a splitting of hairs. Yet even a brief consideration will show that our slovenliness in thinking and in use of language exerts a profound effect upon our teaching. We are teaching clinical medicine merely empirically in terms of "diseases"—save in the case of neurology and cardiology, in which the tendency to think of symptoms and signs in terms of disordered function in normal structures has long been dominant—and not in terms of the range of bodily reactions to a variety of noxae. The student is led to think of illness wholly in terms of largely conventional groupings which are constantly changing, and to believe that "a disease" is a concrete agent that "does things" and produces symptoms. So taught, he is ill equipped to deal with new and unfamiliar reactions or sets of reactions, and cannot handle new and strange experiences as he should. He has to *remember* a great deal, but may *understand* very little of the processes and manifestations of illness. No general principles have been imparted to him. Recurrent changes in terminology and methods add to the difficulties of his task. It has to be admitted that as yet we understand very few diseases fully, and even many common manifestations of illness have so far escaped explanation. There is a rapidly growing mass of facts that yet await interpretation and have not yet been brought under adequate generalizations. This is a time in the history of medicine when new facts are being added to our stock faster than we can—or at least than we do—sort them out or build them into an ordered fabric of knowledge, and much therefore must remain as necessary matter for memorizing.

Added to the accession of new facts, to the unending flux of opinion and terminology, and to the constant arrival of new methods, is a spate of books and journals—good, bad, and indifferent, all competing for the student's attention—carrying on its surface a flotsam of seductive advertising literature on treatment that influences thought and practice far more than is good for medicine. It is in these trying circumstances that the student has to learn, and the doctor to practise, medicine. Of the coherence and more fully reasoned arguments, and of the precise terminology of the ancillary sciences of anatomy and physiology, we see ever less trace in clinical teaching and writing as the mass of unrelated facts and hypotheses accumulates round us.

Nothing is more clear than that we lack both an adequate language—and the rational use thereof—and a body of first principles in medicine, and also the will to provide ourselves with a body of theory based upon these necessities of a science of medicine.

General Principles of Medicine

The plea is therefore made that some attention shall be given to the theoretical aspect of medicine, and to its formulation and teaching, in any proposed reform of medical education. We who are teachers cannot but confess that too few of us have set ourselves to this urgent task; to synthesizing the information at our disposal, and to the elucidation of facts by clear generalizations. We have been too willing to follow the beaten paths of routine clinical teaching, or, when engaged in research, too eager to add to the bulk of raw information, to be willing to pause for thought and to take up the difficult task of developing a general theory of medicine and of eliciting general principles. In short, we have found action—of one kind or another—easier than thought, and it is greatly to be feared that it is in this uninspired frame of mind that we are contemplating a reform of the curriculum.

It is the fundamental defect of our teaching that we have not given the student a firm grasp of general principles, we have not taught him to weigh evidence, to discriminate or to think logically, and we have too often failed to imbue him with that keen desire for understanding that is the essence of true education. We have been content to preoccupy him with feats of memorizing and with the acquisition of an increasing number of techniques.

If, at first sight, it seems unfair to indict the finished products of our teaching with being less than adequately endowed with critical faculty and scientific thought and method, we have only to look round on the medical scene to discover very numerous examples of these basic faults.

They are to be seen in every aspect of medicine and in every category of doctor, both teachers and taught. One disquieting example is the prevalence of unsubstantiated general notions about ill-health. Thus there are still far too many for whom those ill-defined conceptions, "focal sepsis" and "auto-intoxication," provide a sort of "reach-me-down" explanation of almost every variety of chronic illness. Holocausts of teeth and tonsils have been offered up on the altar of this notion, and there can be few maladies—psychological or somatic—which have not been hopefully, if irrationally, treated by these crude procedures, or by the undiscriminating devastation of air sinuses.

Not less indicative of unsound standards of thought is the tendency to assume that in a given case any improvement that follows the administration of a particular remedy must be directly due to its pharmacological action, and a succession of subsequent disappointments to secure benefit often fails to correct the first and hasty impression or to abate our wishful thinking. Although we are all aware of the *post ergo propter* fallacy, it has all too little influence upon our judgments.

The indiscriminate use of almost every newly discovered product of chemical ingenuity is another disturbing feature of modern practice. Few middle-aged women in ill-health can now hope to escape a course of stilboestrol; the sulphonamide drugs are not always used with conspicuous judgment; and our wholesale employment of vitamin preparations might lead the naive observer to suppose that we have found in them a panacea for a wide range of human ills. Doubtless in course of time a sound balance of opinion is reached in respect of all such remedies, but only after much wasteful use and to the accompaniment of fresh uncritical enthusiasms for yet newer remedies. These are matters we dare not continue to tolerate with equanimity.

A striking instance of the ephemeral fashion in theory and practice is provided by psychological medicine in our day. For at least a quarter of a century, and in a literature of unexampled volume, we have been presented with elaborate, and not always harmonious, hypotheses of the psychological genesis and treatment of psychological disorders, major and minor. We have been encouraged to regard the mind as a sort of *chimaera in vacuo bombinans*, and the personality as an entity standing in no relevant relationship to the brain. Yet within the past three or four years we have been seeing an increasingly rapid flight from psychotherapy in favour of the treatment of psychological disorders by physical assaults upon the brain, in the form of chemically and electrically induced convulsions and of mutilations of the frontal lobes. Here we observe, not a scientifically controlled and recorded experimental approach to a new theory and treatment, but a widespread and too often wholly uncritical and inadequately documented employment of drastic procedures the perils and final fruits of which cannot yet be seen. Psychotherapy, meanwhile, still remains the logical corollary to hypotheses of causation that have nowhere been explicitly abandoned; but none of those who, while "on with the new," are not yet "off with the old" seem to have noticed the antinomy inherent in this therapeutic right-about-turn.

It can hardly be maintained that the prevalence in medical thought and practice of what Tristram Shandy called "hobby-horsical" tendencies, and of the other defects exemplified, can justly be attributed to a mere dearth of information imparted to the doctor during his period of training. They surely arise from those underlying faults that have already been called fundamental, and they cannot possibly be remedied by still further increasing the amount and range of factual knowledge we expect of the student.

Training in the Theory of Medicine

We have been too preoccupied with the vocational and technological aspects of training, and too little interested in the theoretical basis of medicine. We have taught medicine too exclusively as a practical art, and, largely unnoticed by us, medicine has been passing from the stage of simple observation and of empiricism to one in which theory must play an ever larger part. In our hands, it is true, a great deal of medicine has not reached a stage in which broad generalizations are practicable, and much memorizing of facts remains a necessary task for the student. Nevertheless, we might make this easier for him by emphasizing general principles even in the purely vocational side of his training. By this we refer to clinical observation and the methods of diagnosis and treatment, and to the acquisition of a sound basic factual knowledge of disease. Yet this is clearly not the whole of an educational process, and does not by itself give the student sound habits of training, does not teach him how knowledge has been and is being gained, nor impart the ability to recognize sound sources of information and to reject ill-founded speculation and the wishful thinking that plays so large a part in our therapeutic assessments.

If these intellectual aims are to be realized we shall need teachers with a special interest in disease as a whole rather than in individual patients, who will teach on clinical material primarily to display and exemplify general processes of disease. They will have to concentrate upon the making of generalizations and the weaving into a pattern of the many and at present largely unrelated strands that make up the general body of medical knowledge. It becomes increasingly difficult for the independent clinical teacher engaged in private practice to undertake this task as it deserves and requires, and its pursuit may well be the main function of those whole-time academic teachers who are already established in some of our medical schools, and whose numbers will surely have to be increased in future. It would be naive indeed to suppose that a man's capacity for generalization and interpretation can ever depend primarily upon the sources from which he derives his living. Practising physicians who are clinical teachers may in the future, as they have in the past, give us some of our most penetrating generalizations. What is suggested is that we shall choose our professors of medicine from those who have given some indication of their capacity for and interest in general ideas, and that in virtue of their status and freedom from the harassing conditions of private practice they will be free to devote part of their talents undisturbed to the building up of a theory of medicine. This essential task in the building of ordered knowledge will have in future to receive its due share of academic recognition if men are to be encouraged to undertake it; for the transmuting of information into ordered knowledge is a task not less difficult, or less essential, than the acquisition of new facts: a consideration to which in this generation we have been strangely blind, as the present chaos in medical thought sufficiently witnesses.

Pruning of the Curriculum

In addition to this rebuilding of the very foundations of medical education, there can be no doubt that an urgent need is a quite ruthless pruning of the range and amount of factual knowledge we expect of the student. These must be cut down. We cannot rationally expect that the newly qualified doctor shall be the complete obstetrician, paediatrician, psychologist, orthopaedist, and expert on hygiene and social medicine.

There will doubtless be a chorus of protest that no one does expect this; yet if we assess the separate opinions of specialists upon what they want for their own branches this is precisely, by implication, what they do seem to expect. A modern full-dress textbook of medicine, surgery, or obstetrics will show how extravagant our expectations already are. These subjects must be stripped to their essentials, and further knowledge upon any one of them acquired after graduation. If new matter is to be introduced into the curriculum, some of the old must go, so that the final reformed scheme asks even less factual knowledge than we now demand; but what we do ask of this kind must be more fully co-ordinated and coherent, and informed by sound general principles. Notions of the critical importance of their own special aspects of medicine that may be urged by enthusiasts must not be allowed to rush us into a new and even worse crowding of the curriculum than we at present see.

For example, in the realm of psychological medicine the content of both normal and clinical psychology is highly charged with controversial matter: conflicting hypotheses

compete for recognition as generalizations of the facts of observation, and these "facts" are not always clearly distinguishable from assumptions. Psychology is in a ferment, and we must not plunge the student into the fermenting-vat. The exponents of this field of medicine must first put it in order and lend it coherence before psychological medicine can hope—or ask—to take its proper place in medical education. This is not to say that the present place taken by it in the curriculum is adequate, but to suggest that a wise infusion of medical education by the principles of psychological medicine demands something more fundamental than the compilation of a long list of titles of lectures and appointments to be crammed into an already overloaded course.

Essentials of Reform

Similar considerations must determine and limit the requirements of other special branches of medicine. Each must be subordinated to the balance and moderation we wish to see in a new scheme of medical education. In short, the essentials of reform in medical training may be summarized as follows:

(1) A carefully thought out pruning of the amount of factual knowledge we seek to impart, ruthlessly undertaken in order that

(2) the student may be enabled to develop a more thoughtful and critical attitude, and a deeper understanding of the causes and manifestations of disease.

(3) An explicit recognition of the necessity of a leaven of theoretical medicine, side by side with its vocational aspects, and the provision of a category of teachers who shall develop it.

To these ends every branch of medicine must be prepared to make some sacrifices, so that we shall turn out thoughtful and discriminating graduates, capable of handling the unending flow of new experiences that must come to them in the practice of their profession, and capable also of independent judgment. On this sound stock we can always graft a higher order of knowledge in any desired branch of medicine.

The considerations put forward in this article, and thus summarized, will be familiar to all readers of Sir Thomas Lewis's volume of addresses entitled *Research in Medicine*. In these the fundamental principles of medical education, and the qualities and outlook of the teachers of medicine, theoretical and vocational, are discussed more amply and with more authority than I can command. No one who bears any responsibility for the reform of medical education can rightly ignore the principles laid down and expounded in these addresses.

Conclusion

There are, of course, other aspects of the total problem of medical education not dealt with in this summary expression of a point of view: for example, the type of general education best fitted for the future medical student; the status and categories of teachers we shall need; the better organization of clinical teaching, and the necessity for a drastic reform of our present chaotic and purely vocational examination system. In respect of the last-named, the gross disorganization of the precious last year of the student's clinical training by the quarterly instalments of the Conjoint Finals would defeat any system of teaching.

In short, the problem is a most complex one, and can be solved only when we have formulated the general principles of a reform of the curriculum and of our methods of teaching. The immediate and urgent issue here raised is the necessity for avoiding another patchwork and compromise revision of medical training and the swamping of the student by the addition to his burdens of fresh requirements from new branches of medicine, or from old branches that have taken new names and adopted new slogans. It would be folly to assume that this danger does not exist. The increasing and inevitable specialization in medicine has called into existence sectional interests nearly all striving for what they regard as adequate recognition for themselves, and it is the growth and momentum of these interests that may well threaten the drawing up of a new and rational plan of medical education.

In 1932, in the columns of this *Journal*, Dr. Charles Wilson, as he then was, wrote an article, entitled "The Student in Irons," in which in clear and admirable terms he laid bare the defects of the content and methods of our teaching of the medical student. Therein he presented, more lucidly than I can hope to do, the aims that should inspire us in any reform. A brief citation from that paper may be allowed.

"It is nowhere denied that we ask impossible tasks of students, who are bewildered by hours of listening, and that we stamp out the habit of reflection by a ceaseless drill. And this is done in the name of education. . . . So strange an anomaly may set us thinking how we are come to such a pass. The blunt truth would appear to be that the handling and revision of the curriculum are based on a misconception of what we can and ought to attempt in a medical school. The one purpose of the student's years is, it seems, not to train and test habits of thought, but to collect and store a set of facts, as squirrels hoard the nuts on which they hibernate. . . . It may be conceded that such a policy was reasonable when medicine was a slowly progressing science that did not greatly alter in a man's lifetime. To-day it leaves him bankrupt when he has scarcely begun. The little he knows is soon antiquated, and he cannot keep up with a rapidly changing science, for we have so contrived to educate him that he cannot educate himself. . . . We trust neither his industry nor his capacity. He must be driven into different pens for every hour of the day, along with a drifting flock that presses now this way and now that. And this, if I may be allowed to change a metaphor, in the hope that he may one day recognize a disease because he has seen it before."

Surely, this analysis goes far more deeply into the problem than do the two reports we have considered, and shows a recognition of the total requirements of a medical education that is absent from them.

If now we are to content ourselves with a so-called reform that attempts no more than to fit still more into the medical course on the pretext that medicine is enlarging its scope, we shall have betrayed the medical student of the future, and shall have failed to do what is now possible to build a science of medicine with its own body of first principles and its own grammar.

PETHIDINE AS AN OBSTETRIC ANALGESIC

A REPORT ON 150 CASES

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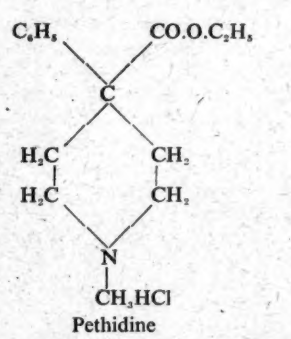
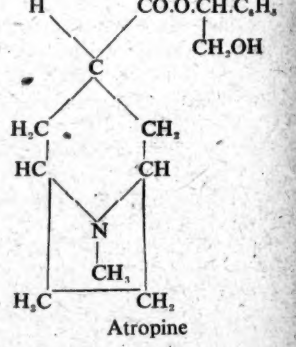
Pharmacology of Pethidine

Pethidine (also known as dolantin, dolantal, and demerol) is the name given by the General Medical Council to the hydrochloride of the ethyl ester of 1-methyl-4-phenyl-piperidine 4-carboxylic acid, which was synthesized in 1939 by Eisleb and Schaumann in a search for atropine derivatives. The chemical relationship of pethidine to atropine is seen in the following formulae:



Pethidine



Atropine

Unlike morphine it is a relatively simple compound, although on close inspection of the formula some remote chemical similarity can be discerned between pethidine and morphine; thus both possess a piperidine ring.

The early clinical and pharmacological work on pethidine was done on the Continent, although most of the publications since 1940 are inaccessible owing to the war. It is claimed that clinically it is an outstanding analgesic, midway in action between morphine and codeine. Its analgesic action has been studied by Climenko, Homburger, and Barlow (1943), using the Hardy, Wolff, and Goodell (1940) technique, which consists in measuring the pain threshold of the skin to varying intensities of thermal radiation from a lamp. It was shown that 100 mg. by mouth raised the pain threshold by 50% for as long as six hours. By this method Batterman and Himmelsbach (1943) have shown that 50 mg. of pethidine intramuscularly is twice as potent as 22 mg. of codeine, and that 100 mg. parenterally approximates in analgesic potency to 1/6 gr. of morphine.

It is stated that pethidine is unique in possessing a morphine-like analgesic action, as well as being effective as a spasmolytic and sedative. Its pharmacology has been extensively investigated by Duguid and Heathcote (1940), Schaumann (1940), Gruber *et al.* (1941), and Barlow (1943). The spasmolytic effect has been attributed to a direct depressant action on smooth muscle resembling that of papaverine, and to an atropine-like action on the parasympathetic nerve endings. It is more effective than papaverine in depressing smooth muscle, but less active than atropine. It relieves visceral pain not only by raising the pain threshold but by relaxing smooth muscle. Intubation studies by Batterman (1943) have demonstrated the spasmolytic effect of pethidine on the human stomach, pylorus, and small and large intestines. Animal experiments have yielded conflicting results, depending on the species used, on the technique employed, and on whether the organ was isolated or *in situ*. The spasmolytic effect of pethidine on the human ureter has been demonstrated by Climenko and Berg (1943).

The sedative effect of pethidine, which is more pronounced when given parenterally, is definite but not as marked as that of morphine. Rovenstein and Batterman (1943), who have used pethidine as a post-operative sedative, consider that the effect of 100 mg. hypodermically is equal to that produced by 1/4 gr. of morphine. After large doses sleep and drowsiness may occur, particularly after parenteral administration, but this is of short duration and less than the period of analgesia, and the patient can be easily aroused (Batterman, 1943). The effect wears off in two hours, although if the drug is given at night or to relieve pain sleep may be prolonged. Unlike morphine, pethidine does not produce a state of amnesia.

Effect on the Uterus.—Studies on the effect of pethidine on uterine muscle are conflicting. According to Dreyer (1943) it relaxes the intact and excised uterus; but this is denied by Gruber *et al.* (1941), who claim that in the dog it stimulates the intact and excised organ. This opinion is shared by Yonkman *et al.* (1943). Solomons and Widdess (1943) also state that it stimulates the guinea-pig and rabbit uterus *in vitro*. Using the balloon technique of Chassar Moir, they report that pethidine causes a slight increase in the tone and frequency of contraction of the human uterus *in vivo*. Care must be taken in interpreting clinical results with the balloon technique, as the introduction of a foreign body such as a balloon into the uterine cavity may produce reflex contractions. Woodbury (1943), using this technique, found that pethidine had no effect on uterine contractions in the human pregnant uterus. The effect of any drug on the uterus, animal or human, depends on the blood supply and stage of proliferation of the organ, which in turn depend on the oestrogen and progesterone tide. Thorp (personal communication) states that pethidine enhances the contraction of the rabbit uterus treated with pituitary extract in the oestrogenic phase, but relaxes it after contraction with adrenaline; in the progesterone phase pethidine has no effect. According to Thorp pethidine has no effect on the muscle tone of the uterus of the pregnant cat. In the following study it was evident that pethidine exerted a definite antispasmodic action on the cervix during labour.

Clinical Studies in Labour

The study was made because the unique properties of pethidine that have been reported—its combined analgesic, antispasmodic, and sedative actions—suggested that it might be a very useful drug for producing obstetric analgesia. Also the fact that it is less of a respiratory depressant than morphine (Batterman, 1943) should render it safer for the baby than the latter, the dangers of which are well known. The reported absence of mental depression, urinary retention, and constipation following the administration of pethidine (Batterman, 1943) also appears to be a definite advantage, as these symptoms are commonly produced by morphine. Lastly, the relatively high margin of safety compared with morphine permits repeated dosage. The possible future shortage of morphine also makes the clinical evaluation of the newer analgesics imperative.

Since this study was begun two publications on pethidine as an obstetric analgesic have appeared in America, where the drug is known as demerol. Gilbert and Dixon (1943) report that in doses of 100 mg. to 400 mg. it noticeably shortens the time of labour in primiparae. The average dose was 300 mg. Adequate analgesia without amnesia was obtained by 72% of the patients; in combination with a barbiturate satisfactory amnesia was experienced by 61%. No adverse effects were observed on mother or baby. Roby and Schumann (1943) gave pethidine intramuscularly in doses of 100 mg. in combination with scopolamine to women in labour as soon as pains began. Satisfactory amnesia was produced in 85% of the cases; 14% of the babies needed some form of resuscitation.

Selection of Patients; Administration; Dosage

Clinical Material.—The series treated with pethidine reported here consisted of 150 cases. Detailed records were kept on the first 100 cases only. Of these, 53% were placid and not apprehensive; 47% were nervous and apprehensive. One of the latter group had a spastic cervix which dilated satisfactorily under the influence of pethidine, but required forceps delivery. Another had a rigid cervix, which failed to dilate and necessitated lower-segment Caesarean section. The 100 cases recorded comprised 70 primigravidae and 30 multigravidae, and all were apparently normal on medical and obstetric examination.

Method of Administration.—Oral administration, which was tried at first, was found to be unsatisfactory on account of the frequency of vomiting and the slowness of action. Roby and Schumann also found the oral route unsatisfactory. It was observed that it took from 20 to 60 minutes for the maximum analgesic effect to be produced by mouth. Pethidine was therefore given either intramuscularly or intravenously, or by the combined routes. Of the 70 primigravidae, 33 received the drug solely by intramuscular injection, while 37 were given both an intramuscular and an intravenous injection. Of the 30 multigravidae, 20 were given the drug intramuscularly, and 10 received it intravenously with or without an accompanying intramuscular dose.

Dosage and Times of Administration.—Two dosage schemes were tried:

(*a*) A total dose of 200 mg. of pethidine was given intramuscularly either alone or in combination with the stock mixture used in the labour ward (see Table I) or else with scopolamine gr. 1/150. The pethidine was given in two doses of 100 mg., one an hour after the other. The second injection was given either alone or with the stock mixture or scopolamine. In cases in which the first stage of labour was prolonged for more than 8 to 10 hours after the first injection of pethidine further injections were given, up to a total of 400 mg. in 24 hours. Gilbert and Dixon (1943) gave up to a maximum of 650 mg. in the same period. It was exceptional in our series to give more than 200 mg. The average time taken for the production of analgesia after intramuscular administration was 15 minutes, and the duration of action 3 to 4 hours.

(*b*) In order to obtain a more rapid effect some cases received pethidine intravenously. A dose of 100 mg. was given initially. This acted in 5 to 10 minutes. An hour later another 100 mg. was given intramuscularly, either alone or in combination with scopolamine gr. 1/150. The duration of action was 3 to 4 hours. If the first stage of labour was prolonged for more than 8 to 10 hours after the initial dose further injections of 100 mg. were given intramuscularly up to a total of 400 mg. in 24 hours.

Vomiting and other unpleasant side-effects may occur if pethidine is given rapidly by the intravenous route. This was minimized by asking the patient to close her eyes and by taking five to ten minutes over the injection. Ideally, the first injection of pethidine is best given when the cervix is

two fingers dilated and the patient is having regular contractions. Although pethidine does not depress respiration to such an extent as morphine, it would appear that it is not wise to give it within 2½ hours of the expected delivery of the child. This figure compares favourably with that of four hours for morphine. Many of the patients receiving pethidine actually slept during labour.

Evaluation of Analgesic Effect

The degree of analgesia produced in the first 100 cases compared with controls receiving the stock mixture used in the labour ward (chloral hydrate gr. 30, potassium bromide gr. 30, tinct. opii m. 10) was as follows:

Degree of Analgesia	Pethidine Cases	Control Cases
Complete	10	0
Satisfactory	50	10
Fair	34	90
Nil	5	0
Amnesia	1	0
	100	100

These figures refer to the first stage of labour only, as in most cases Minnitt's gas-and-oxygen apparatus was used to complete the second stage of labour.

In only one case in this series—a young primigravida—was amnesia produced. Initially she was given morphine gr. 1/6 and scopolamine gr. 1/150, followed by 100 mg. of pethidine intramuscularly, which was repeated twice, and a further dose of scopolamine gr. 1/150. Intermittent chloroform anaesthesia was administered at the end of the second stage. It is of interest to record that the duration of labour from the time of administration of the morphine-scopolamine was 5¼ hours. Roby and Schumann (1943) obtained satisfactory amnesia in 85% of their cases. A dose of 100 mg. of pethidine was given intramuscularly, followed by scopolamine 1/100 gr. A further injection of scopolamine gr. 1/200 was given an hour later, and in the case of primiparae repeated every one to five hours.

Effect on Duration of Labour

Table I gives the average duration of labour, in hours, of the various groups, the interval between the initial dose of pethidine and the birth of the child, the interval between the final dose of pethidine and the birth of the child, and the average duration of the third stage in minutes.

TABLE I

Medication	Parity †	No. of Patients	Route		Average Duration of Labour (hours)	Average Time between Initial Dose and Birth (hours)	Average Time between Final Dose and Birth (hours)	Average Duration of Third Stage (min.)
			i.m.	i.v.				
Pethidine with or without stock mixture*	P	59	26	33	20·70	7·21	5·34	20
	M	23	15	8	16·47	5·09	3·18	20
Pethidine and scopolamine	P	11	7	4	15·95	9·66	6·76	14·5
	M	7	5	2	16·89	5·90	5·30	15·5
Patients receiving stock mixture only	P	70			18·81			18·9
	M	30			10·74			17·8

* The stock mixture contained chloral hydrate gr. 30, pot. bromide gr. 30, tinct. opii m. 10, aq. chloroformi ad 1 oz.
† P = Primiparae; M = Multiparae.

On examining this table it would appear that labour was prolonged in those patients receiving pethidine, in comparison with controls not receiving the drug. This apparent prolongation of labour was in our opinion due to the high proportion (47%) of apprehensive and nervous women in the selected cases. The actual duration of labour, however, from the time of administration of the pethidine in both primigravidae and multigravidae falls well within, if not below, average time limits. Gilbert and Dixon (1943) report that in their series pethidine noticeably shortened the duration of labour in primiparae, and Roby and Schumann (1943) state that the drug does not prolong labour.

Instrumental Delivery

The use of pethidine did not appear to increase the incidence of instrumental delivery. In this series forceps were used in 10% of all cases, but there was always a good obstetric reason for this. In only one case was there weakening of uterine contractions necessitating the application of forceps. The incidence of instrumental delivery in the control group not receiving pethidine was 13%. The reasons for the use of forceps in the two groups were as follows:

Reason for Forceps	Pethidine Cases	Control Cases
Contracted outlet	5	2
Deep transverse arrest	1	4
Extreme nervousness and rigid perineum	1	0
Extreme nervousness and lack of co-operation	2	2
Weak uterine contractions and rigid perineum	1	1
Maternal distress	0	2
Foetal distress	0	1
Threatened uterine inertia	0	1
	10	13

Obstetric Complications

The use of pethidine did not increase the incidence of obstetric complications, of which there were three. Two were cases of retained placenta and one a rigid cervix. In one instrumental delivery the placenta was retained, but was successfully expressed by Credé's method. In no other case in the series was there any weakening of the contractions, and hence there has been no tendency to post-partum haemorrhage. On the contrary, it was observed that in a case in which pethidine had been used placenta and membranes were much more liable to come away complete from the uterus. In the second case of retained placenta the latter was adherent to the uterus, necessitating manual removal, but in this instance there was a history of a retained placenta in a previous delivery. In the case of the rigid cervix, in spite of a labour prolonged for 48 hours, and the use of morphine, scopolamine, and pethidine, the cervix failed to dilate, and lower-segment Caesarean section had to be performed in the interest of mother and child.

It would appear that pethidine exerts a definite antispasmodic effect on the cervix, particularly in the clinical entity spasmodic cervix, in the treatment of which it is superior to morphine.

In the control group obstetric complications occurred in 2%. Both were cases of post-partum haemorrhage from a relaxed uterus due to weak contractions.

Reactions in the Mother

The commonest toxic manifestation in the mother was vomiting, which occurred in 28% of the cases. As previously stated, oral administration was discontinued because of vomiting and delayed action. It was also observed that a transitory rise in blood pressure of some 10 to 20 mm. systolic and/or diastolic was fairly common within 15 minutes of administration. This rise of blood pressure did not last for more than 30 to 60 minutes. No association between vomiting and rise of blood pressure was established. On account of the possible rise in blood pressure pethidine was not given to cases complicated by toxaemia or hypertension. Other untoward symptoms often observed, particularly after intravenous injection, were dizziness, tingling of the limbs, vertigo, and dryness of the throat. In no case was excitement observed. The frequency of vomiting following intravenous injection was effectively reduced by injecting the pethidine very slowly over a period of five to ten minutes, while requesting the patient to keep her eyes closed.

Condition of Babies

Of the 100 babies born to mothers receiving pethidine 91 were apparently normal and active at birth, and 9 were slow—i.e., required resuscitation measures. These figures are similar to those of Roby and Schumann (1943). There were two deaths, due respectively to a tentorial tear and a prolapsed cord. The neonatal morbidity for the first three days after birth was *nil*. Seven of the babies were cyanosed and 7 suffered from respiratory depression. Slight impairment of pulsation was noted in 9 babies and poor muscle tone in 8. In no case did any of the babies fail to respond to routine methods of resuscitation for the newborn, crying well within at most 20 to 30 minutes of birth and responding to stimulation.*

* In the control group given the chloral-bromide-opium mixture there were 2 slow babies. One was limp, but responded quickly to treatment. The other was blue, and went into white asphyxia; it recovered with treatment.

In respect of the 9 slow babies Table II shows the dose of pethidine and the time between its administration and the birth of the child.

TABLE II

Parity	Degree of Dilatation of Cervix on Initial Dosage	Initial Dose	Time of Initial Dose before Birth	Final Dose	Time of Final Dose before Birth
1	4 fingers	100 mg. i.m.	2 hrs. 10 min.	100 mg. i.m.	30 min.
1	3 ,,	100 mg. i.m.	55 min.	—	—
1	3 ,,	100 mg. i.m.	2 hrs. 25 min.	100 mg. i.m.	20 min.
1	Anterior lip	100 mg. i.v.	20 min.	—	—
0	,, ,,	100 mg. i.v.	2 hrs.	—	—
0	3 fingers	100 mg. i.v.	2 hrs. 35 min.	100 mg. i.m.	1 hr. 5 min.
0	4 ,,	100 mg. i.v.	2 hrs. 35 min.	100 mg. i.m.	1 hr. 10 min.
0	3 ,,	100 mg. i.m.	2 hrs. 25 min.	100 mg. i.m.	1 hr. 25 min.
0	4 ,,	100 mg. i.m. + scopolamine gr. 1/150	3 hrs. 15 min.	100 mg. i.m. + scopolamine gr. 1/150	1 hr. 15 min.

In all these cases the progress of labour was much quicker than was anticipated clinically. From experience with them it was decided that it is undesirable to administer pethidine within 2½ hours of the expected delivery of the child. The average time between the final dose and the end of labour in Gilbert and Dixon's cases was 2 hours 22 minutes in primiparae.

Summary

In the dosage employed pethidine is an effective obstetric analgesic. It does not, however, produce amnesia unless given with adequate doses of other drugs—e.g., scopolamine and barbiturates.

Only 5% of the patients failed to obtain any relief from pethidine. Analgesia was complete or satisfactory in 60%.

Two dosage schemes were found to give satisfactory results: (*a*) Initial dose 100 mg. intramuscularly, repeated one hour later with a chloral-bromide-opium mixture or with scopolamine; (*b*) 100 mg. pethidine intravenously, followed by 100 mg. intramuscularly an hour later, either alone or with scopolamine gr. 1/150. In either technique further intramuscular injections of 100 mg. can be given up to a total of 400 mg. in 24 hours. The first injection is best given when the cervix is two fingers dilated and the patient is having regular contractions.

Pethidine and scopolamine form an effective combination for producing obstetric analgesia.

Given intravenously pethidine produces analgesia in 5 to 10 minutes; intramuscularly in 15 minutes. The duration of action is 3 to 4 hours. Intravenous administration produces a more rapid and powerful initial action, but intramuscular administration is highly satisfactory and equally effective. Intravenous administration is contraindicated in labour complicated by toxaemia or hypertension.

Pethidine has a definite antispasmodic action on the cervix.

Statistically, in comparison with controls pethidine appeared to prolong labour. This was probably due to the selection of the cases. The figures compare well with average figures for the duration of labour.

No increase in the incidence of instrumental delivery or obstetric complications was associated with the use of pethidine.

Reactions in the mother included vomiting, a temporary rise of blood pressure, dizziness, tingling of the limbs, and dryness of the throat. These were transient, and, although unpleasant, gave no cause for alarm.

Of the babies 91% were apparently normal and active at birth; 9% were slow, and required resuscitation.

There were no deaths among the babies that could be attributed to pethidine. The neonatal (three days) morbidity was *nil*.

This investigation was carried out in the obstetric unit of St. Mary Abbots (L.C.C.) Hospital, Kensington, from Jan., 1943, onwards. Thanks are due to the consultant obstetrician, Mr. W. C. W. Nixon, for his helpful criticism of the investigation and the manuscript.

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OBSTETRIC ANALGESIA WITH PETHIDINE

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Pethidine hydrochloride has been studied in our maternity department since Oct., 1941, in regard to its analgesic and spasmolytic effects on normal labour. It is a pain reliever of fairly recent introduction, the hydrochloride of the ethyl ester of 1-methyl-4-phenylpiperidine-4-carboxylic acid, discovered by Eisleb and Schaumann in their search for an ideal analgesic with spasmolytic atropine-like properties. The drug is known on the Continent as "dolantin" and in the United States as "demerol," and was officially named pethidine by the G.M.C. a year ago.

The pharmacological virtues and faults of pethidine have been carefully surveyed by Rothschild (1941) of Basle. It possesses a powerful analgesic action like that of morphine, but is stimulating rather than depressing to the central nervous system. Because of its depressant effect on smooth muscle tissue its spasmolytic properties have been compared to those of atropine and papaverine. Several authors have claimed that it can antagonize the effects of acetylcholine and histamine on the intestine (Eisleb and Schaumann, 1939; Duguid and Heathcote, 1940; Schaumann, 1940). Gruber *et al.* (1941) could not acknowledge the spasmolytic action. It is relatively non-toxic, and has little effect on the pulse rate or the pupil. It lowers the blood pressure and depresses the respiration only in large doses.

Only a few clinical reports on pethidine are available in this country. Prof. Christie (1943) undertook an investigation on behalf of the War Wounds Committee of the Medical Research Council. Pethidine proved to be of value as an analgesic when given by the mouth to 335 patients of six different hospitals. Of the patients with "severe pain" 55% obtained complete relief and 20% partial relief; of those with "moderate pain" 61% were completely and 12% partially relieved. Toxic symptoms were uncommon and never serious. Fitzgerald and McArdle (1943) described the usefulness of pethidine in neurological cases.

The Continental literature on pethidine in a variety of conditions is very encouraging; and as regards obstetrics, Benthin (1940, 1942), Fuchs (1941), and Sonnek (1941) have described excellent results in the relief of pain in labour. Detailed literature is not accessible in this country.

It seemed to me to be advisable to investigate another method of inducing analgesia in the first stage of labour which would cover three important points—namely, (1) reduce pain without having a depressing effect on the respiration and circulation of mother or baby; (2) avoid psychic depression; (3) avoid prolongation of labour. The choice of obstetric analgesics in any particular case has often to be made according to existing conditions. That is why an ideal method has not yet been agreed upon and legions of analgesic and anaesthetic substances in a variety of methods of administration are used all over the world. The exhaustive studies of obstetricians in this country have shown that "twilight sleep" is, for the baby, a dangerous first-stage treatment. All general anaesthetics weaken uterine contractions and retraction. The barbiturates depress the prothrombin levels in mother and child by causing damage to the liver, in which prothrombin is formed (Browne, 1942; Fitzgerald and Webster, 1942). Barbiturates are sometimes responsible for delay, with deleterious effects on the third stage of labour.

In domestic practice chloral hydrate and bromide and/or morphine are still most commonly used. While the first two drugs are safe and fairly satisfactory, the use of morphine for analgesia is unsafe for both mother and baby. It is encouraging that Eardley Holland (1943) has reminded the profession again of the dangerous effects of morphine as regards the respiration of the foetus. Especially in the present era, in which there is an increase in the number of premature labours, the liability to primary apnoea and atelectasis or pneumonia after use of morphine or the popular derivatives has to be taken into account. In short, all narcotics depress the respiratory centre of the foetus far more than that of the mother, and occasionally

in attempting to quiet the mother in the first stage of delivery the foetus is rendered dangerously apnoeic. It is proved by experiments (Rosenfeld and Snyder, 1939) that non-volatile anaesthetics (chloral hydrate, paraldehyde, barbiturates, and morphine) depress or completely abolish foetal respiratory movements at a level of dosage well below that required to anaesthetize the mother. Volatile anaesthetics with enough oxygen (ether, nitrous oxide, and cyclopropane) can produce satisfactory anaesthesia of the mother without interruption of the intra-uterine respiration. The chief inference to be drawn, therefore, is that on clinical trial of a new drug for obstetric analgesia in the first stage of labour only brief action is justifiable, and in the later stages anaesthetics (nitrous oxide) alone should be used; for these are drugs of brief action and have relatively slight depressive effects on respiration (Yandell Henderson, 1939).

Clinical Trials

The effect of pethidine hydrochloride on 80 normal patients in labour was studied; 56 were primiparae, 24 multiparae. Of all these patients with severe pain in the early first stage of labour, 14 (17.5%) were greatly relieved, 58 (72.5%) experienced good relief, and 8 (10%) were unrelieved. There was no striking difference between primiparae and multiparae in the relief of pain. Pethidine can be administered by any of the parenteral routes as well as by the mouth.

In our first series of clinical trials pethidine was given by mouth only, in order to determine its safety for mother and baby. The results are set out in Table I.

TABLE I.—*Relief of Pain according to the Dose of Pethidine in 80 Cases*

Dose	Severe Pain		
	Great Relief	Good Relief	No Relief
25 mg. for 2 doses, repeated ½-hourly ..	4	11	—
25 mg. for 2 doses, repeated hourly ..	1	6	1
25 mg. for 2 doses, repeated 2-hourly ..	—	2	—
25 mg. for 2 doses, repeated at long intervals	1	3	—
25-mg. single dose	7	35	7
25 mg. for 3 doses, repeated ½-hourly ..	—	1	—
25 mg. for 3 doses, repeated at long intervals	1	—	—
Total	14	58	8
% of relief	17·5	72·5	10

The effect of oral medication appears in 20 to 30 minutes, and, in doses of 25 mg., lasts from 1 to 4 hours. From the figures in Table I it seems that in the majority of cases a single dose of 25 mg. gave a good relief of severe pain in the early first stage of labour. The 25-mg. dose repeated half-hourly for 2 doses was tried in a series of patients, and gave, in my opinion, the most satisfactory analgesic effects. In a recent series of patients a 50-mg. single dose, with a 25-mg. dose repeated in 40 minutes, led to an increase of complete analgesic effects. In Table II I have summarized the side-effects of pethidine on both foetus and mother. The ill effect on the foetus was evident in only 2 cases. In the first a single 25-mg. dose produced a diminution in the foetal heart sounds for several minutes, without changing their quality. In the second case a dose of 25 mg. given half-hourly for 3 doses resulted in a depression of the foetal heart sounds for several minutes. No other signs of foetal distress were evident, and oxygen inhalation with 1 c.cm. of anacardone brought the foetal heart rate back to normal. Among the 80 babies born of the mothers with pethidine analgesia 5 showed signs of mild asphyxia (4 blue, 1 white), which responded quickly to the routine treatment for asphyxia. There was no stillbirth or neonatal death in the whole series. All babies had a healthy cry. In 3 mothers toxic manifestations were noticed that did not seem to depend on the total dosage of pethidine (see Table II). No patient showed excitement or psychic depression. Several patients improved in behaviour after pethidine administration. The antispasmodic property of pethidine seems to me especially worthy of observation during labour. After the first stage is established with cervical dilatation varying from 2 to 3 finger-breadths, pethidine had a satisfactory influence on the course of labour, in which regular, prolonged, and rhythmic pains were present. In contradistinction to many other analgesics pethidine does not delay labour.

TABLE II.—*Side-effects of Pethidine*

Dose	On Foetus		On Mother	
	F.H.S. Drop	Asphyxia	Stillbirth	Toxic Symptoms
25 mg.	1	2 mild (1 blue, 1 white)	None	1 vomiting ++
50 mg.	—	2 mild, blue	,,	,, ,,
75 mg.	1	1 ,, ,,	,,	1 (bradycardia)
Total	2	5	—	3

Results

Table III shows in brief the action of pethidine on the uterus. Among the 56 primiparae the first stage was shortened in 17 cases (well under 4 hours), and among the 24 multiparae in 8 cases (under 2 hours). The condition of the cervix was recorded for each case, and we were often surprised how satisfactorily the dilatation developed. The *second stage* was within normal limits, with the exception of 3 cases in which, in view of secondary inertia, deep transverse arrest, and maternal fatigue, a low-forceps delivery was effected. Only 1 episiotomy (rigidity) and 1 second-degree perineal tear (rapid labour) occurred among the 80 patients. The third stage of labour was normal, apart from 2 cases of post-partum haemorrhage—one case after rapid delivery (25 mg. pethidine at hourly intervals for 2 doses), and one after normal delivery (25 mg. pethidine at hourly intervals for 2 doses). In three cases of elderly primiparae (35 years) with some rigidity of the cervix and perineum, pethidine had a very favourable influence, especially on the dilatation period. It seems to me that pethidine may have a considerable field in many cases of cervical dystocia and lower the number of obstetrical interventions, which is so high in this age group. But also in elderly multiparae (35–45) we noted extremely quick dilatation of the often rigid parts, without ill effects on mother or baby. Pethidine may have a place in a definite group of cases in which the cervix is the cause of delay and in which it will aid in completing the dilatation and so avoiding uterine inertia. The exact mechanism of the effect of pethidine on uterine tone needs to be proved by further pharmacological experiments. The clinical experience of the shortening of labour by its definite relaxing effect on the cervix is valuable proof of its antispasmodic property. Mackenzie (1943) also acknowledged it recently. In our investigation we have only studied the effect of pethidine as an analgesic in the course of normal labour. We will have ample opportunity of trying the drug in various fields of abnormal labour and in combination with different analgesics. Meanwhile I have been much impressed with its immediate effect in severe after-pains and in pyelitis in pregnancy, in which it gave practically complete relief of the colicky spasmodic contractions. We have just started the use of pethidine in gynaecology and hope it will prove a useful drug in some severe types of dysmenorrhoea. Solomons and Widdess (1943) recently reported relief in 60% of their dysmenorrhoea cases which they considered due to central analgesic action of pethidine.

TABLE III.—*Action on the Uterus*

	Dilatation of the Cervix (T Stage)			After-effects
	Rapid (1–4 hrs.)	Normal (6–12 hrs.)	Slow (Over 12 hrs.)	
Primiparae ..	17	32	7	Post-partum haemorrhage: 2 (1 rapid, 1 normal dilatation)
				1 perineal tear 2nd degree
	1–2 hrs.	6 hrs.	Over 6 hrs.	
Multiparae ..	8	12	4	

Summary

Pethidine hydrochloride was studied for its analgesic and spasmolytic effect on 80 normal mothers in the early first stage of labour. About 17.5% were greatly relieved, 72.5% had good relief, and 10% had no relief. The behaviour of excited patients was improved. Primiparae and multiparae were relieved equally.

For reasons of safety the oral route was used in this series of investigations. The effect of the oral medication of a 25-mg. dose appeared in 20 to 30 minutes and lasted 1 to 4 hours. The optimum pain response seemed to occur with a 25-mg. dose repeated half-hourly for 2 doses. A 50-mg. single dose and a 25-mg. dose repeated in 40 minutes will probably yield more complete analgesic effects. [Since submitting this paper for publication we have followed up a further 50 cases with a 50-mg. single dose and a 25-mg. dose occasionally added. 22% of the cases showed complete relief.]

Pethidine had in the majority of cases no objectionable side-effects on mother or baby. In 3 mothers transient vomiting and bradycardia were noted. Twice a transient depression in the foetal heart sounds developed, and 5 babies showed a mild degree of asphyxia. No other harmful effects on the child were observed.

It was found that the progress of labour was not delayed. Pethidine had a remarkable shortening effect on the duration of normal labour, possibly by its direct relaxing action on the uterine cervix. In elderly primiparae with rigidity of the soft parts the influence on the dilatation period was very favourable.

No harmful effects on uterine tone or perineum, by shortening labour, were observed, apart from 2 cases of post-partum haemorrhage and 1 second-degree perineal tear.

Definite conclusions about pethidine in normal labour can only be obtained from observations by several investigators on a large amount of clinical material.

So far as can be judged, pethidine hydrochloride, if carefully dosed and timed, is a very useful analgesic and spasmolytic drug in midwifery.

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BONE MARROW AS A SITE FOR THE RECEPTION OF INFUSIONS, TRANSFUSION, AND ANAESTHETIC AGENTS

A REVIEW OF THE PRESENT POSITION

BY

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As my experience in several surgical centres separated by some distance is precisely the same, I have assumed—I think correctly—that it represents a cross-section of the present attitude of the profession towards bone marrow as a site for infusion and transfusion: there are but few who have used this route a dozen times, and many are apprehensive about introducing a cannula into the sternum.

It is probable that I should be less inclined to voice an opinion on a comparatively new procedure were it not for past memories. Ten years ago, when I pressed for the more general adoption of *continuous* intravenous saline (Bailey and Carnow, 1934), I met with initial reluctance, if not active opposition, towards the (then) unfamiliar procedure. At that time, although I had divided my previous ten years among surgical posts in three university cities and one London teaching hospital, I had never seen a *drip* infusion or transfusion performed. To-day there is no difficulty in getting continuous intravenous fluid therapy carried out. On the contrary, one has to exercise constant vigilance in curtailing its use; for, as sometimes happens, enthusiasm, particularly enthusiasm unyoked to physiological understanding, leads to the abuse of good remedies.

It was from the American and Canadian literature that my interest in continuous intravenous saline infusions was stimulated. So with bone marrow as a receptor; I had never even thought of a medullary cavity in connexion with the reception of parenteral fluid until I read the paper by L. M. Tocantins and J. F. O'Neill (1941).

At first I employed bone puncture as a last resort, for instance, in those occasional cases in which most of the available veins had been utilized previously. As time went on I found an increasing field of usefulness for marrow infusion, and now I am prepared to state that the medullary cavity of the manubrium is as good a receptor as a vein for infusions of all kinds and for pentothal anaesthesia. In a few instances I consider bone marrow is a better avenue for infusion than a vein, and to bring this belief to the notice of those who may be called upon to resuscitate the very shocked and the very young is the main object of this communication.

Advantages

1. In very shocked patients there is difficulty, sometimes considerable difficulty, in cannulizing a vein. Even when the cannula is *in situ* the veins may be so collapsed that the reception of parenteral fluid is unsatisfactory, and one must stay with the patient and employ various devices to expedite the flow. Sternal puncture is a more crude procedure which is effected mostly by "feel." Once entry to the medullary cavity has been gained, the flow of fluid into the marrow is unaffected by those factors which militate against unhampered intravenous fluid therapy.

2. Sternal puncture can be carried out in a comparatively poor light—a most important consideration under black-out conditions. With experience and good organization, it should be possible for a medical officer to cannulize the sterna and start infusions more rapidly and more certainly than he could hope to do when cannulizing veins under similar circumstances.

3. Those who have had to give intravenous infusions to dehydrated infants will welcome the tremendous advantages of bone marrow as a receptor. It is certain; it is safe—at least I have neither seen nor heard of any ill effects from inserting a Witts sternal-puncture needle into the tibia and gravitating saline, glucose, or plasma into the bone marrow. At any rate, I am sure that I am correct in stating that this procedure is safer than utilizing the superior longitudinal sinus.

4. A cannula in the sternum is "out of the way" when an operation is being performed on the abdomen or lower extremity. In such circumstances, the whole of the infusion paraphernalia being near the head of the patient, it is convenient for the anaesthetist to attend to the infusion without moving from his accustomed position.

5. Thrombosis and phlebitis, of course, cannot occur. These inseparable complications of intravenous fluid therapy are admittedly infrequent: with correct technique they should not exceed 1%, but my impression is that this incidence is exceeded.

Disadvantages and Dangers

1. Theoretically, osteomyelitis may result. In an experience of over 60 cases I have seen no sign of it.

2. Whole blood cannot be introduced as rapidly as into a vein by gravity.* The apparatus designed by Messrs. Evans Sons Lescher and Webb overcomes this difficulty, for introduction is speeded up by oxygen pressure. Raising the intramedullary pressure is inclined to give pain.

3. The only real danger is that both plates of the manubrium may be perforated and the fluid be introduced into the superior mediastinum. This is not a theoretical conception, for it occurred in my practice when performed by an extremely capable house-surgeon. It is desirable to add that in this instance an "unwinged" Witts needle was employed and, fortunately from our point of view, the patient was suffering

* We are having increasing success with gravity drip blood–saline transfusions by this route. As with all blood–saline transfusions Officer's mixing chamber cannot be bettered.

from hopeless malignant disease. The cannula shown in the accompanying illustrations can be regarded as fool-proof provided the simple technical details given below are followed.

Technique

The patient lies prone. A wheal of local anaesthetic is raised on the skin in the middle line just above the manubrio-gladiolar junction. Using a large but short hollow needle, the point is driven right on to the bone and about 2 c.cm. of 1% solution of novocain is infiltrated. This subperiosteal infiltration is an important detail. The area is then massaged with a swab so as to disperse the anaesthetic and enable one to feel the manubrio-gladiolar synchondrosis. The trocar and cannula is inserted just above this ridge (Fig. 1) and pointed almost directly downwards towards the floor, but with a very slight inclination towards the patient's head. An unhurried boring motion is imparted to the instrument. The pressure, at first slight, is increased. The feeling that the outer plate has been penetrated is unmistakable. Penetration being accomplished, the angle of the instrument is altered and the point is directed towards the patient's head. The wings do the rest—they ensure that the correct depth has been reached, they set the correct angle, and they prevent too deep penetration (Fig. 2). The trocar is removed. The next step is to take a 10- to 20-c.cm. Record syringe half full of sodium citrate solution, which is in readiness. The syringe is affixed to the cannula and some of the citrate solution is injected. The piston is withdrawn. If what appears to be blood (it is red marrow) is easily and liberally withdrawn so that it colours the whole of the contents of the syringe (Fig. 3) the extremity of the cannula is correctly placed within the marrow cavity. If the flow of marrow is not entirely free, the trocar is reinserted into the cannula, which is then very slightly withdrawn and another attempt to aspirate marrow is made. When entry of the tip of the cannula into the marrow cavity is undeniable, more citrate is injected and the syringe is disconnected. Quickly the cannula is linked with the infusion or transfusion unit, the tubing of which has been previously demonstrated to be free from air bubbles. Strips of adhesive plaster of an appropriate width are used to fix the wings to the chest wall, and narrow strips of the same material are placed to steady the attached tubing at the correct angle (Fig. 4).

Spectators unfamiliar with the method invariably remark (*a*) how painless is the procedure ; (*b*) how easily fluids gravitate into the medulla—they liken the rate of gravitation (before it has been damped down) to that expected after entry of a large unobstructed vein.

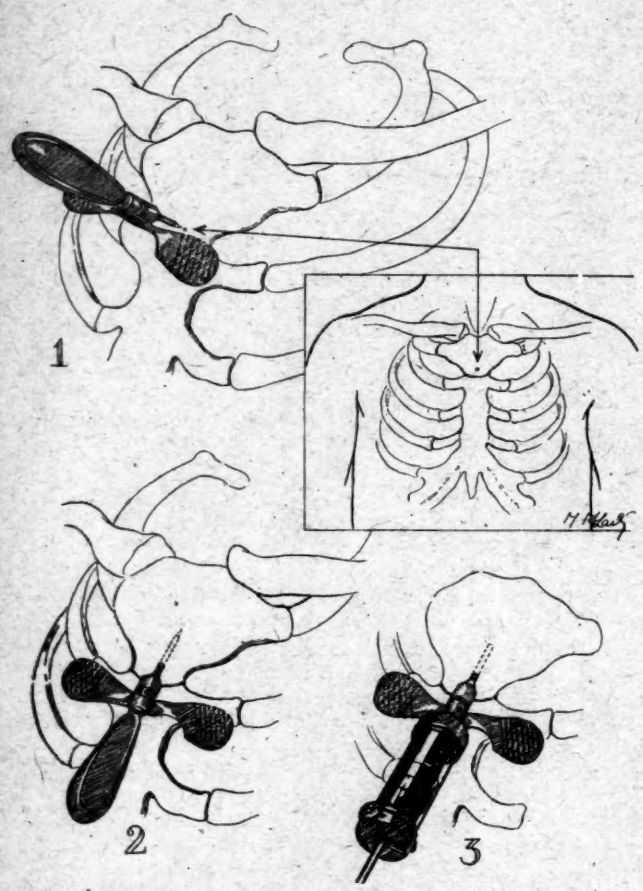

FIG. 1.—The trocar and cannula about to enter the manubrium.
FIG. 2.—The medullary cavity entered.
FIG. 3.—Having injected a small amount of citrate solution, the piston is withdrawn, and if red marrow is easily and liberally aspirated the extremity of the cannula is correctly placed within the marrow cavity. This step is fundamental.

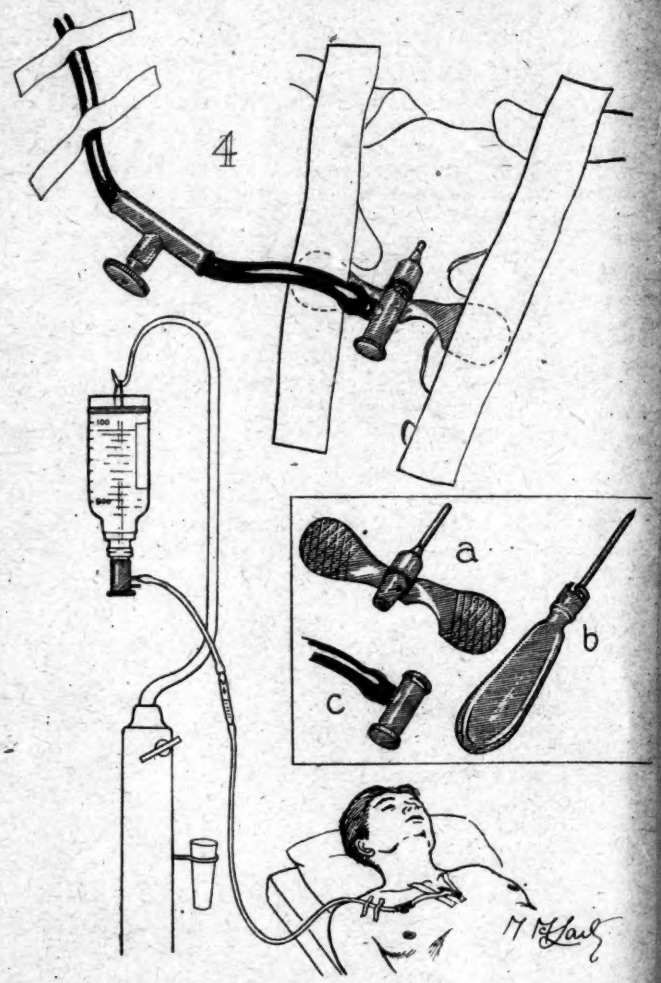

FIG. 4.—The cannula is linked to the infusion apparatus.

For want of ocular demonstration, generations of surgeons have suspected that too often broken bones are filled not with red marrow but with black ingratitude. It may well be that the rising generation will verify almost daily that even in old age the normal sternum is full of marrow so red and so fluid that on macroscopic acquaintance it is indistinguishable from freshly drawn blood.

Mr. P. Regen of Messrs. Willen Bros. not only has carried out the making of the trocar and cannula, but by his enthusiasm and knowledge has been largely responsible for the present state of its development. Several features of the instrument, notably the large-handled trocar, were devised by Mr. T. W. Pearce, biochemist at the Dryburn Hospital, Durham. My former house-surgeon, Mr. L. D. Miller, is still investigating, on the living and in the post-mortem room, the depth of the marrow compartment from the skin overlying the sternum. As a result of these investigations it is possible that the instrument may be improved still further.

Major F. M. Burton, M.D., F.A.C.S., U.S. Army Medical Service, has helped me with gravity blood transfusions by this route.

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STAPHYLOCOCCAL SEPTICAEMIA TREATED WITH SULPHADIAZINE

BY

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The chemotherapy of staphylococcal septicaemia by means of drugs of the sulphonamide group has been disappointing. In a study of the efficacy of the newer derivatives of this group Kolmer and Brown (1942) conclude that the chemotherapy of staphylococcal infections is unsatisfactory and is certainly inferior to similar therapy applied to haemolytic streptococcal and pneumococcal infections. Reimann (1942), after an exhaustive review of published cases, is of the same opinion. The treatment of choice for these infections is by means of penicillin. Unfortunately penicillin is not yet available for general use, and until supplies are forthcoming the sulphonamides remain the most hopeful therapeutic agents.

In the case here recorded sulphadiazine showed itself to be remarkably efficacious. Finland, Peterson, and Goodwin (1942), who have compared the efficacy of various preparations of sulphonamides, treated five cases of staphylococcal septicaemia with sulphadiazine. The average total dose given was 147 g. They claim a good therapeutic response in one case and a doubtful response or good initial response with relapse in the other four. It should be noted that, of these four, one was complicated by pyonephrosis and three by osteomyelitis. There were no deaths, but the cases complicated by bone involvement needed surgical drainage before chemotherapy was effective. These authors conclude that the efficacy of sulphadiazine is probably similar to that of sulphathiazole, but its lower toxicity makes it the drug of choice, particularly when prolonged therapy is desirable. In the present case sulphadiazine was not used until sulphathiazole had proved to be ineffective.

Case History

The patient, a soldier 32 years of age, was admitted to a military hospital on Feb. 23, 1943, complaining of aching in the limbs and malaise for one week. His health previously had been good, but a fortnight before the onset of his illness he had had a boil on the back of his neck which had been treated with hot fomentations and vigorous expression of pus. During several days before admission he had felt unwell and feverish, and was thought to have an influenzal attack. There had been some cough with blood-stained sputum, and heavy night sweats had been troublesome. The bowels had been constipated. He complained also of a tender lump over the left scapular angle that was painful when he sat back against his pillows. There had been no known contact with any infectious disease.

On examination the temperature was 101° F. and pulse rate 115. There was no evident anaemia, but the lips had a cyanotic tinge. The throat and teeth were in good order. The lungs showed no obvious abnormality. The cardiovascular system was normal and the blood pressure 130/95. The spleen could not be felt. No abnormality was found in the central nervous system. There were tender nodules at the angle of the left scapula, in the right lumbar region, in the groins, on the abdominal wall, in the right thigh, and on the inner aspect of the left knee. Some of these were acutely tender, and over several the skin was reddened. The urine was acid in reaction, with no sugar or albumin, and the deposit contained a few leucocytes and epithelial cells. The blood count on admission was: haemoglobin, 84%; red blood cells, 4,690,000 per c.mm.; colour index, 0.91; white blood cells, 14,000. The sputum contained no tubercle bacilli, but was blood-stained.

The patient was put on full doses of sulphathiazole. On March 2 a fresh crop of nodules appeared, a hectic temperature persisted, and his general condition was very poor. A differential white cell count gave a total of 20,700, with 78% polymorphonuclear cells. Blood culture proved sterile, but pus from a fluctuant nodule on the left arm was reported on as follows: "Smears: Large numbers of pus cells and clusters of Gram-positive cocci, morphologically staphylococci. Culture: Profuse growth of *Staph. aureus*." *X*-ray examination of the chest showed a "right basal pneumonitis."

By March 9 the patient's condition had still further deteriorated. There was no abatement in the fever and he had developed an ulcer on the right cornea. Several of the abscesses were fluctuant, and from two of them a small amount of thick pus was aspirated. A few petechial spots were noted on the trunk. A large, deep, and very tender abscess developed in the muscles of the right thigh, and there was acute pain with local tenderness in the region of the left elbow; but radiographs of the joint and of the right femur were negative. The white blood cell count was 16,600.

On the following day a shower of emboli occurred over the lower extremities, giving the picture of an extensive macular rash. The temperature was at this time 103.5° F. and the pulse rate 145. On March 13 sulphathiazole was stopped, a course of 60 g. having been completed without obvious benefit. The administration of sulphadiazine was then begun. After 48 hours the temperature was normal, and the patient's comment was: "I feel quite different. I did not expect to feel as I do now in six months' time." A blood count showed: haemoglobin, 82%; red blood cells, 4,600,000 per c.mm.; colour index, 0.9; white blood cells, 22,000, 77% being polymorphonuclears.

The temperature did not settle altogether, and a slight evening rise persisted, but the general improvement in well-being was maintained and there were no further embolic phenomena. The white cell count on March 17 was 11,600, and on March 25 14,200. At this time sulphadiazine was stopped after a total dosage of 100 g. The patient's general condition was now fairly satisfactory. Pathological examination of the urine had been repeatedly negative. The haemoglobin was 82% and the leucocyte count on April 1 was 13,600. A large indurated swelling of the right thigh was still present, causing much pain and discomfort. A further radiograph of the right femur was negative. By April 13 this swelling had become more localized, with a suggestion of central fluctuation. The haemoglobin and white cell count were unaltered. There was no further rise of temperature. On April 20, in view of the prolonged septic infection and moderate degree of anaemia, one pint of fresh compatible blood was given by intravenous transfusion. Haemoglobin was 96% after transfusion. On May 4 the abscess in the right thigh was aspirated, 30 c.cm. of blood-stained serous fluid being withdrawn; this was sterile on culture. Convalescence thereafter was uneventful.

Summary

A case of staphylococcal septicaemia is recorded in which a dramatic response was obtained with sulphadiazine after sulphathiazole had proved ineffective. Since penicillin, the drug of choice, is not generally available, optimum use must be made of the sulphonamides in treating this condition. Sulphadiazine is the preferable derivative of this group because of its low toxicity and its apparent greater efficacy.

My thanks are due to Col. A. D. Stirling for permission to publish this case.

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SPONTANEOUS RUPTURE OF ABNORMALLY MOBILE SPLEEN

BY

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Spontaneous rupture of the spleen in non-tropical countries is a very rare condition, and is known to occur occasionally in patients suffering from malaria or typhoid; a few cases of rupture of leukaemic spleens have been recorded. Zuckerman and Jacobi (1937) reviewed 28 cases of rupture of the normal spleen, but considered that only 21 of these could be accepted. In the case now reported a spontaneous rupture of the spleen occurred while the patient was in bed in hospital suffering from acute axillary lymphadenitis; subsequent examination showed only inflammatory changes in the spleen.

Case Report

A soldier aged 35 was admitted to the Borough General Hospital, Ipswich, on Sept. 13, 1942, suffering from pain in the left axilla of 24 hours' duration. On the evening before his admission he complained of aches and pains all over the body and had vomited once. On admission the temperature was 101.6° F., pulse rate 95, and respiration rate 22. A few enlarged tender glands were felt in the left axilla, but no primary cause for this adenitis was found. He had been given 7 g. of sulphapyridine during the previous

day in a camp reception station. After admission he was given sulphathiazole by mouth and local treatment by short-wave therapy.

On Sept. 15 the patient suddenly collapsed. It was apparent that a severe intraperitoneal haemorrhage had occurred; a blood count was carried out and blood transfusion was given. The count showed: red cells, 3,800,000 per c.mm.; Hb, 60% (Sahli—standard 100% = 15.5 g.); white cells, 36,370 per c.mm.: myelocytes 3,700, metamyelocytes 6,600, neutrophil polymorphs 22,000, lymphocytes 2,590, eosinophils 370, mononuclears 1,110 per c.mm. There were no nucleated red cells: this was taken to be a response to severe haemorrhage. A pre-operative diagnosis was made of rupture of the spleen or of an intraperitoneal aneurysm, probably of the splenic artery.

At operation the peritoneal cavity was full of blood, five and a quarter pints being measured. The spleen was ruptured transversely at its convex border. Splenectomy was easily performed, as there were no adhesions and the splenic pedicle was unusually long. The patient collapsed during closure of the abdomen and died in spite of the usual resuscitation methods.

Post-mortem Findings.—The stomach contained a fair quantity of undigested food and some bright blood. The mucosa showed minute erosions, but no chronic ulceration. The sternal bone marrow was greyish red and hyperplastic. No other pathological lesions were found.

Histological Examinations.—Spleen:—No definite pathological change was noted in the sections, apart from evidence of acute inflammation. Sections were sent to Dr. A. H. T. Robb-Smith for his opinion. His report is as follows: "The spleen has the appearances, apart from actual trauma, of those found in a reaction to an acute inflammation, and it is likely to be an example of an acute inflammatory condition with an acute splenic tumour which has ruptured spontaneously." The weight was 280 g. Axillary lymph glands showed microscopical evidence of subacute lymphadenitis; this finding was confirmed by Dr. Robb-Smith. Bone-marrow films (taken immediately after death) revealed marked myeloid reaction, presumably due to inflammatory changes. The liver showed no abnormal changes.

Past History.—Steps were taken to trace the previous medical history of the patient. His Army record sheet showed that he had never been abroad. There was no history from the patient or from his unit of any injury within recent months. Apart from bronchitis he had had no other illnesses.

Discussion

Zuckerman and Jacobi (1937) consider that minor degrees of torsion or of angulation of the splenic pedicle are sufficient to slow the circulation and to cause congestion of the spleen, resulting in rupture. They also consider that minor gastro-intestinal disorders may initiate the torsion or angulation and thereby cause the congestion and rupture. They found that the phrenico-splenic ligament is absent in about 2% of individuals; absence of this ligament is one of the causes of undue mobility of the spleen.

In the present case the serious condition of the patient prevented accurate anatomical investigation, but it was remarked at the time of the operation that the spleen was excessively mobile and thus splenectomy was a most simple procedure. It is therefore probable that the phrenico-splenic ligament was absent, and no restricting peritoneal bands were encountered. The patient had vomited before admission: this and the finding of food residue in the stomach, long after solid food had been taken, suggest that a gastro-intestinal disorder had developed. The presence of blood in the stomach may be attributable to obstruction of the vasa brevia by the same angulation or torsion that contributed to the rupture of the spleen. The presence of blood in the stomach and intestines has been reported in conditions of shock. The spleen in our case was not grossly enlarged; the structural changes were those representing the normal response of the spleen to a toxaemia and, as such, are to be expected in any acute inflammatory process. The rupture must therefore be regarded as being due to a mechanical process rather than to a pathological condition.

Ledderhose (1890) and Foucault (1925) considered that spontaneous rupture could occur only in a diseased spleen. Zuckerman and Jacobi have reviewed 28 cases of rupture of the alleged normal spleen, but accepted only 21 cases as genuinely normal. None of these was associated with acute inflammation. In their series spontaneous rupture occurred in 16 males and 12 females. The age incidence was: under 20 years, 2 cases; 20–30, 7 cases; 30–40, 6 cases; 40–50, 7 cases; 50–60, 5 cases. In 5 cases there was a history of epigastric distress related to meals, and in 5 cases the onset of rupture was just after eating or drinking. Shock was noted in only 15 cases. Pain in the left shoulder was present in 3 cases and in the right shoulder in 1 case. Halliwell (1933) reported a case of spontaneous rupture of a normal spleen in which there was a long splenic pedicle. In Stretton's case (1926) rupture occurred in a female patient after coitus. In Susman's case (1927) the rupture occurred after the patient had bent down to lift a heavy object, and it was suggested that the contraction of the abdominal wall caused the rupture. Bohler (1933) reported a similar case occurring after the patient had bent to lift a heavy object. Abell (1933) recorded a case of rupture of a wandering spleen with torsion of its pedicle. In the cases described by Smith, Morrison, and Sladden (1933) and by Burnett and McMenemey (1935) splenomegaly was solely due to congestion, and in the former case pregnancy was thought to be a contributory factor.

In our own case the spleen was excessively mobile and rupture occurred at rest in bed. No gross pathological changes were discovered in the spleen beyond simple inflammatory processes such as must exist in most septic conditions. Some gastro-intestinal disorder was indicated by the vomiting before admission and also by the post-mortem finding of undigested food residue in the stomach many hours after the preceding meal.

Summary

A case of spontaneous rupture of an abnormally mobile spleen is described in which the rupture occurred while the patient was at rest in bed and in which there was no preceding accident.

A discussion of the causes of spontaneous rupture of the spleen and a review of the literature suggest that excessive mobility may subject the spleen to congestion by angulation or torsion of its pedicle sufficient to result in spontaneous rupture.

Our sincere thanks are due to Dr. Robb-Smith for reporting on the sections and for helpful criticisms.

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Medical Memoranda

Achrestic Anaemia with Achlorhydria

Achrestic anaemia as first described by Israëls and Wilkinson is characterized by: (1) the findings of a macrocytic anaemia; (2) free HCl in the stomach contents; (3) a prolonged course which fails to respond to efficient anti-pernicious-anaemia therapy; (4) megaloblastic hyperplasia of the bone marrow; (5) the recovery of adequate amounts of the anti-anaemic principle from the liver. The aetiology is the failure to utilize the anti-anaemic principle or to mobilize it from the tissue stores.

Recently I have had under my care a case of achrestic anaemia differing a little from the above outline in that there was achlorhydria. Such a condition must be very rare.

CASE HISTORY

A widow aged 56 was admitted to hospital, having complained for six months of dyspnoea, faintness, weakness of the arms and legs, extreme exhaustion, nausea, and vomiting. The symptoms were gradually getting more pronounced. Her appetite had been poor, but her weight was steady. She had received no previous treatment.

Examination revealed a pale woman who looked older than her years but showed no signs of wasting. The pulse was 100 and regular. The face was puffy and the teeth were carious. There were purpuric spots on the arms, chest, and abdomen, with oedema of the hands and feet. The tip of the spleen was just palpable, and the liver was enlarged 2 in. There were no enlarged lymph glands, and no other abnormality in the heart, lungs, C.N.S., or urine was detected. The blood count was: red cells, 715,000; white cells, 4,000; haemoglobin, 20%; colour index, 1.4. The film showed definite macrocytosis. Fractional test meals even with histamine revealed achlorhydria, with excess of mucus. The stools were always negative for occult blood.

The patient was immediately given one pint of citrated blood by the drip method. There was no reticulocyte response to intramuscular injections of hepatex, 10 c.cm. stat. and 5 c.cm. daily for two weeks, the reticulocyte count never going above 1%. This same hepatex gave good results in other cases of pernicious anaemia in the ward. She was repeatedly transfused, as transfusion seemed the only means of keeping her alive. She was given liberal allowances of fersolate, redoxon, yeast, marmite, liveroid, ventriculin, thyroid, and HCl dil. No one preparation or combination of preparations seemed to help. At times, quite independently of treatment, there were definite remissions, and on one occasion the haemoglobin rose to 58%. No cause for these remissions could be detected. During one of them her carious teeth were extracted, but even this did not appear to affect her progress.

After being treated for a year the patient died of bronchopneumonia. At the necropsy (by Dr. W. Whitelaw) the only pathology of the intestinal tract was a chronic gastritis. The femoral bone marrow was extremely hyperplastic. The heart was not enlarged, and the myocardium was pale. The lungs gave the findings of bronchopneumonia. There was much free iron in the liver, kidneys, and spleen. On microscopical examination the bone marrow was seen to be megaloblastic.

This case presented most of the characteristics of achrestic anaemia, as there were the findings of a macrocytic anaemia, failure to respond to efficient anti-pernicious-anaemia therapy, and a megaloblastic hyperplasia of the bone marrow. Achlorhydria is certainly very unusual, but Israëls and Wilkinson (1940) have suggested that it might occur in achrestic anaemia, and state that they had one such instance. In my case the achlorhydria may have been due to the chronic gastritis, the result of dental sepsis. Unfortunately there were no facilities for testing the amounts of anti-anaemic principle in the liver, but there is enough evidence to substantiate the case without this.

I wish to thank Dr. John F. Wilkinson, Liverpool, for his help and advice; Dr. T. M. Anderson, medical superintendent, Dudley Road Hospital, Birmingham, for permission to publish the case; and Dr. W. Whitelaw, pathologist, Dudley Road Hospital, for his post-mortem findings.

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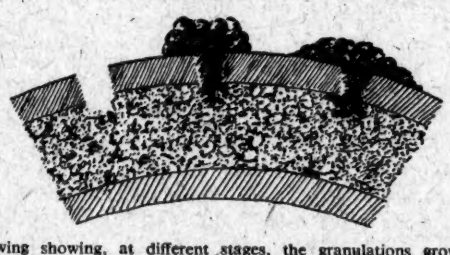
A Proposal to Prevent Necrosis of the Tabula Externa of the Skull denuded of Periosteum

In extensive scalp wounds in which a large area of the skull is deprived of the periosteum the tabula externa undergoes necrosis unless it is covered by skin within a reasonable time. A free graft has very little chance of success in these circumstances because of the poor blood supply of the host tissue, and a pedicle graft may encounter technical difficulties. In my experience the following new method has been helpful:

Multiple burr-holes are made by a hand drill into the whole denuded area of the external table. The holes are 2 to 4 mm. in calibre and 15 mm. apart. They should penetrate into the diploe—a fact indicated by slight bleeding from the bone. In about 7 to 10



Drawing showing, at different stages, the granulations growing out of the diploe.

days granulation tissue originating from the diploe will appear through the holes and spread flatly over the tabula externa surface. The drawing shows the granulations at different stages. In a few days' time the granulations are sufficiently confluent to provide a good blood supply, and are then covered by a Thiersch graft. The graft is treated in the usual manner. The denuded area should be covered from the beginning with a 10% cod-liver-oil–vaseline ointment in order to prevent drying.

Whether this method would be useful or not in cases in which there is already some necrosis of the external table is not yet certain, and only future experience will show; but it is certainly worth trying.

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Reviews

ENCEPHALOGRAPHY

Encephalography. By E. Graeme Robertson, M.D., M.R.C.P., F.R.A.C.P. Monographs from the Walter and Eliza Hall Institute of Research in Pathology and Medicine, Melbourne. No. 2. (Pp. 105. 32s. 6d.) Melbourne and London: Macmillan and Co.

The invention of encephalography, by which is meant radiography of the brain after the introduction of air by the lumbar route, put at the disposal of neurologists a diagnostic technique the value of which is still too little appreciated. Dr. Graeme Robertson's book would be of value, therefore, if it did no more than bring home to the physician how much can be learned by means of encephalography when this is carried out by an expert.

Robertson gives a detailed account of his technique with a discussion of its anatomical basis. Encephalography carefully carried out may be expected to yield information about the contents of the posterior fossa, including the fourth ventricle, the aqueduct of Sylvius, the third and lateral ventricles, and the cerebral subarachnoid space. The author might perhaps have stretched his title enough to include a chapter on myelography, in which air is used in the diagnosis of obstructions of the spinal subarachnoid space. The value of encephalography in the diagnosis of intracranial tumour is well known. Dr. Robertson thinks that its usefulness in the diagnosis of post-traumatic headache and epilepsy has probably been overestimated, but it gives considerable help in the recognition of degenerative lesions, and may help to distinguish between cerebellar degeneration and neoplasm.

The illustrations are numerous and beautifully reproduced, and line drawings are used with advantage to interpret the skiagrams.

OCCUPATIONAL THERAPY

Principles and Practice of Rehabilitation. By John Eisele Davis, M.A., Sc.D. (Pp. 211. $3.00.) New York: A. S. Barnes and Co., Inc.

This book is mainly concerned with methods of rehabilitation that have been found useful for the mentally ill. The term "rehabilitation" as used by the author is practically synonymous with the older term "occupational therapy." The emphasis is on the scientific approach; each individual has to be assessed for his assets as well as his liabilities before a plan of rehabilitation is drawn up. Attention is paid first to the individual's peculiarities and then to the problem of his socialization. The author points out the importance of the gap that is apt to exist between the kind of activities available in hospital and the kind of work that the patient will be expected to face when he has to re-establish himself as a wage-earning unit in the world outside. In the treatment itself the author reminds us that we have on the one hand to be content to begin with very simple activities to suit the patient's level of performance; but that, on the other hand, his self-esteem must not be hurt by introducing him to a childish type of occupation.

The book contains a discussion of principles and seems to come down on the side of work as an end in itself. Galen is quoted to the effect that work is Nature's best physician. Nevertheless the author does not fail to emphasize as well what work means in terms of self-esteem. Examples from the experience of countries at war are added as illustrations, and the point is made that a better community organization in peacetime might maintain as useful members of the community many individuals who ordinarily become chronic neurotics, or at least a burden to themselves or others.

CLINICAL PATHOLOGY

Clinical Laboratory Diagnosis. By Samuel A. Levinson, M.S., M.D., and Robert P. MacFate, M.S., Ph.D. Second edition, thoroughly revised. (Pp. 980; illustrated. 48s.) London: Henry Kimpton. 1943.

It is doubtful whether anyone can be an authority on all branches of clinical pathology, and somewhat doubtful whether a single book can properly cover the whole subject: individual works on bacteriology, haematology, pathological chemistry, histology, and toxicology are likely to be better sources of information. There are nevertheless several American omnibus

textbooks which attempt to cover the whole field of laboratory work in relation to medicine, and among the more comprehensive is Levinson and MacFate's *Clinical Laboratory Diagnosis*. In the second edition of this work one unusual feature in the original volume has been omitted: this was a full set of instructions for conducting a practical course in the subject for students. Much has happened during the past six years, and additions consequently more than balance this loss: these include a description of photometric methods for chemical estimation, a discussion of acid–base balance, the study of marrow films, and the new complexities of blood grouping, as well as various new chemical estimations. The redundant and misleading list of "Common Infectious Diseases and the Causative Organisms" which we criticized in the first edition has been omitted; the table of characters of individual bacteria has been expanded to 30 pages, and includes many non-pathogenic species. In a work of such immense scope it is useless to expect that every section shall be faultless or complete; on the other hand, most clinical pathologists if they delve in it long enough will probably find something new and useful.

STINGING FISHES

Sting-fish and Seafarer. By H. Muir Evans. With drawings by Irene Hawkins. (Pp. 180; illustrated. 15s.) London: Faber and Faber.

If you are curious about fishes which sting, and if you are curious about a fellow general practitioner who finds time to become an authority on a branch of natural history, you should read this book. It is attractively printed, clearly illustrated, and not very long, so that no one can have the excuse that it is too large a work for a busy man. In these days when the pursuit of science is regarded as a whole-time job it is pleasant to find a scientist of the old school, an amateur in the true sense of the word, who succeeds in finding much that is both interesting and new. For example, in the fish-market in Madeira "picture to yourself a long snaky-looking animal, as jet black as black patent-leather, of the shape of a flat inner tube of a motor tyre, ending with the head of the greyhound form, with wide gape and monstrous long teeth, and enormous eyes, and the tiny bifurcate fin attached to the tapering tail . . . in addition it carried a curious dagger-like spine behind the vent. Cesar de Noronha published a monograph in Portuguese (1925) on the black scabbard fish, which is little known, and this is what he says: 'Near the anal orifice is a terrible offensive weapon consisting of a short strong spine.'" Thus it scarcely needs saying that Dr. Muir Evans is not only a naturalist but that he knows how to write and how to bring his dragons vividly to the reader's fancy. You can learn too of the white scabbard, "a beautiful glistening white fish . . . clothed with silver tissue." In New Zealand it has the name of the "frost fish," because on cold nights it has been known to swim towards the shore in vast numbers, there to be heaped up in a ridge of corpses. Dr. Muir Evans believes this to be an example "of the mass migratory immolation that has been described in lemmings and springbuck." But if you want to know about the springbuck you must read it in the book!

Notes on Books

Sane Psychology: A Biological Introduction to Psychology, by Prof. R. J. S. McDOWALL (John Murray; 9s.), is really the second edition of *A Biological Introduction to Psychology* enlarged and rearranged. Like its predecessor it seeks to introduce the student to psychology from a basis of elementary biology. This means that the psychology must be very elementary also. Provided that the book is regarded strictly as an introduction it will serve its purpose, but the trouble is that so many superficial students never get beyond such an introduction and think that when they have read such a book they know all that is necessary to set up as a practical psychotherapist. Looked at from this point of view, which is admittedly unfair, it becomes obvious that the author has had little or no experience of treating the individual patient. The chief additions are the chapters on the effect of mind on body, in which the author fails to make a clear distinction between a conversion symptom and the emotionally induced disturbances of the autonomic nervous system, and the effect of body on mind, in which the "organic" psychoses and fatigue syndromes are briefly referred to. The descriptions of the various schools of psychology are so brief as to be almost ludicrously inadequate, and the appendix of case histories drawn from the writings of others certainly does not carry the conviction which would be felt if the cases were drawn from the author's own experience.

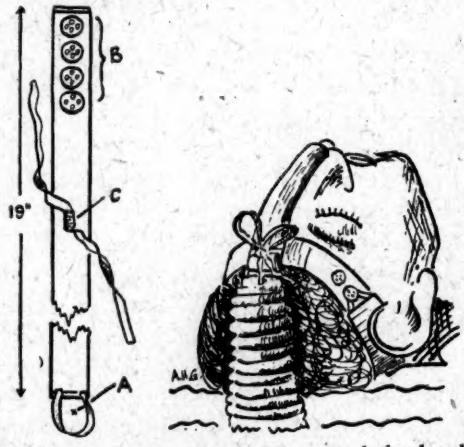
The Child Health Planning Group (hon. secretary, Dr. J. D. Kershaw, Public Health Department, Town Hall, Accrington, Lancs.) has issued a pamphlet, *Education and Health*, dealing with various aspects of the health and well-being of the child and the adolescent, with special reference to school environment and the general system of education. The price of a single copy is 3d., post free.

Preparations and Appliances

THE KING'S COLLEGE HOSPITAL ENDOTRACHEAL HARNESS

Dr. A. H. GALLEY, of King's College Hospital, writes:

Your recent account of the Hudson endotracheal harness[1] prompts me to describe a similar device which has the advantage of being home-made. It consists of 19 in. of garter elastic, preferably white, and from ¼ in. to 1 in. in diameter. As will readily be seen from the accompanying diagrams, one end has a loop of tape (A) sewed on, sufficient in length to slip over any of the buttons to be described later. Near the other end four rubber- or linen-covered buttons are attached (B) in line, along the axis of the harness and about ½ in. apart. Buttons ⅛ in. to ½ in. in diameter are the most suitable. About 6 in. from the button end a length of tape (10 in. is ample) is sewn on to the elastic band so as to leave two free ends of equal length (C). The elastic should be hemmed at both ends to prevent fraying.



When in use the harness is placed around the head in such a position that the attachment of the tape (C) is in the centre of the forehead and the two free ends are tied in a bow around the rubber extension of the endotracheal tube. The loop (A) is then slipped over an appropriate button, leaving the band in slight tension and the rubber extension tube fixed firmly in place. Untying the bow and loosening the loop frees the harness in a matter of moments.

This harness first came into use at King's some ten or eleven years ago, when I was resident anaesthetist, and so far as I am aware no single person claims to have invented it. Like Topsy, "it just growed." The only part I had in its evolution was to increase the number of buttons from one to four and to suggest the use of rubber buttons. Despite this, it is known in certain irreverent quarters as "Galley's garter"!

No doubt such a simple and obvious piece of apparatus must have been thought out and employed in other institutions, but so far I have never seen it described in any medical publication.

AN AMPOULE INJECTOR

Burroughs Wellcome and Co. have developed a unit injection device, the "monoject" brand ampoule syringe, to meet the needs of the Forces in the field. It presents a single parenteral dose of sterile solution of morphine or other drug, sealed in a collapsible tube with a welded closure and a sterile hypodermic needle mounted in the nozzle. The needle is protected from damage and contamination by a plastic cap which is threaded and sealed on to the nozzle of the tube. Removal of the cap and piercing the internal seal with the pin provided renders the ampoule syringe ready for immediate use. The manufacturers state that their entire output of "monoject" brand products is at present reserved for the armed Forces; they hope to be able to meet civilian requirements in the near future.

[1] *British Medical Journal*, Nov. 20, 1943, p. 647.

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EFFECT OF ANAESTHETICS ON GASTRIC TONE AND MOTILITY

In the serious, though comparatively rare, condition of acute dilatation of the stomach gas and large quantities of fluid may accumulate within it. The accumulation of fluid means corresponding losses from other parts of the body, and losses of sodium and chloride; also alkalosis, and possibly tetany. Unless the fluid and electrolyte balances are soon restored death ensues. It appears from the work of Dragstedt and others[1 2] that once the stomach has lost its tone its own secretions stagnate there, as it cannot pass them on to the absorbing part of the gastro-intestinal tract lower down. The secretions are lost by regurgitation through the oesophagus, or else they accumulate in the stomach, causing distension, which may be further increased by regurgitation of fluid from the duodenum. In the later stages the distension may act as a stimulus to increased secretion by the stomach, and the pressure of the enlarged stomach may obstruct the lower part of the duodenum. Acute distension of the stomach has been observed in association with several conditions—e.g., in severe diabetes, after an attack of migraine, in the course of pulmonary tuberculosis, or post-operatively; most often, it is claimed, after laparotomy under general anaesthesia. It seems probable, therefore, that acute distension may result from several different causal factors operating together or singly, and among these anaesthesia and various operative procedures are of special interest.

In order the better to assess the role of anaesthesia Johnson and Mann[3] have recently investigated in dogs the effects of different agents and depths of anaesthesia upon gastric tonus and movements. They used animals in each of which a permanent gastric fistula of the Mann-Bollmann type had been made several weeks previously. Through the fistula a balloon was inserted and connected to a recording manometer. For these experiments the animals were in a fasting condition, and observations were made for a control period of 15 to 30 minutes each time before the induction of anaesthesia. The following different agents or combinations of agents were used in different experiments: ether, nitrous oxide and oxygen, nitrous oxide and oxygen with ether, ethylene and oxygen, ether supplementing basal anaesthesia with bromethol (avertin), cyclopropane and oxygen, cyclopropane and oxygen supplementing basal anaesthesia with bromethol, intravenous pentothal sodium. The depth of the anaesthesia was found to be the most important factor: the deeper the anaesthesia, the greater the reduction of gastric tone and motility. Generally, anaesthesia carried to plane 2, stage III, according to Guedel's criteria,[4] resulted in much-reduced gastric tone and disappearance of motility. Of course, some anaesthetic agents—e.g., nitrous oxide or ethylene—cannot give an anaesthesia of the depth specified. To reach that depth the action of these agents was, in some experiments, reinforced by producing a certain degree of anoxia. The effects on gastric tone and motility were the same as when more potent agents were used without the aid of anoxia. Apparently the effects of anoxia and of anaesthetics upon the stomach are additive.

Johnson and Mann also studied the return of gastric tone and motility after anaesthesia, and the influence of duration of anaesthesia upon the restoration of these. Usually tone came back before motility, or else they reappeared together. The time required varied widely in individual animals. After ether anaesthesia it was usually 2 to 3 hours, but extremes of 1¼ and of 10 hours were observed. In some dogs tone and motility were resumed more rapidly than in others, no matter what anaesthetics were employed. On the whole the times needed for restoration were not very different after the different agents or combinations of agents. A few experiments were made on the effects of lengthy ether anaesthesia. The times needed for restoration of tone and motility were found to be prolonged little, if at all. This is in agreement with Cannon and Murphy's[5 6] finding that in cats ether anaesthesia of long duration prolonged the gastric emptying time little more than ether anaesthesia of short duration. Premedication with atropine and morphine to a degree of drowsiness judged to be comparable with that often produced in man, however, nearly doubled the time needed for the restoration of tone and motility after ether anaesthesia. Johnson and Mann found that after bilateral splanchnicectomy or double vagotomy, or after both operations, the changes brought about in gastric tone and motility during anaesthesia by various agents and during recovery were the same as before those operations. It seems, therefore, that the actions of the agents studied are mainly upon the peripheral motor system of the stomach, with its local neural and muscular components, and that reflex effects through the extrinsic nerves are small.

What remains to be seen is how far the foregoing results hold good for man. Assuming that they do, then it follows that morphine is by no means the ideal agent for pre- and post-operative medication. A substitute for morphine which has its sedative and analgesic actions but not its actions upon the gastro-intestinal tract and respiration is as desirable as it ever was; likewise, a substitute for atropine which inhibits gastro-intestinal activity less. The varying effects of different anaesthetics upon gastric motility and tone are apparently small in comparison with differences between the effects of light anaesthesia and of fairly deep anaesthesia. Depression of gastric tone and motility is more probable after fairly deep anaesthesia, as in abdominal surgery, than after light anaesthesia. How far can such depression resulting from fairly deep anaesthesia be avoided or reduced? A heavy-handed surgeon is likely to require a deeper anaesthesia than his gentler colleague, inasmuch as he is likely to evoke any stretch reflexes which

[1] *Surg. Gynec. Obstet.*, 1931, **52**, 1075.
[2] Dragstedt, L. R., in Lewis, Dean, *Practice of Surgery*, **6**, chap. 10, pp. 1–18. W. F. Prior Company, Hagerstown, Md. 1940.
[3] *Surgery*, 1942, **12**, 599.
[4] Guedel, A. E., *Inhalation Anesthesia*, p. 14. Macmillan, New York. 1937.
[5] *Ann. Surg.*, 1906, **43**, 512.
[6] *J. Amer. med. Ass.*, 1907, **49**, 840.

remain and so hinder his own work. But whether or not this happens, the anaesthetist's aim must be to provide the surgeon with adequate muscular relaxation for the operation intended, and at the same time not to depress the patient by deeper and lengthier anaesthesia than is necessary. In pursuit of these aims the skilled anaesthetist can anticipate the surgeon's needs and accordingly shorten the periods of deeper anaesthesia. This is not, however, the only method available to the anaesthetist; among others are spinal anaesthesia and the combination of peripheral nerve block with light general anaesthesia. In their experiments on dogs Johnson and Mann found that even when spinal anaesthesia extended to the upper thoracic or the lower cervical region gastric tone and motility were depressed. This forms an interesting contrast with the well-known effect of spinal anaesthesia in causing increased activity of the small intestine—an observation, moreover, which according to the authors is not accounted for by reflex stimulation of the splanchnic nerves, as it could be repeated after previous splanchnicectomy, and which also is not accounted for by any action of their local anaesthetic (procaine hydrochloride) mediated through the blood stream, because the injection of quite large amounts of procaine near the spinal cord did not influence gastric tone and motility. Johnson and Mann did not investigate the second of the alternative methods mentioned earlier—the combination of nerve block with light general anaesthesia. But it may have advantages over general anaesthesia, particularly for abdominal surgery, not only in depressing gastric tone and motility less but also in depressing reflex activity in other parts of the body less—e.g., the regulation of blood pressure. It would seem that when procaine is injected near the spine the effects of this via the blood stream upon gastric tone and motility are small, and that the second alternative method is well worth further investigation.

Beyond those considerations, which are connected with the anaesthetic and its administration, there are others certainly not less important. For example, nothing in Johnson and Mann's work diminishes the significance of Cannon and Murphy's[5] *x*-ray studies of the emptying of the cat's stomach. They found that, whilst ether anaesthesia and laparotomy delayed the emptying somewhat, these effects were small in comparison with those of handling the digestive organs. Even quite gentle handling delayed the emptying considerably. In this connexion their observation that handling of the small intestine inhibited gastric activity is another which cannot be accounted for by reflex stimulation of the splanchnic nerves, as the inhibition occurred equally after splanchnicectomy (Cannon and Murphy[6]).

While Johnson and Mann's work makes clearer the influence of some of the factors concerned in acute gastric dilatation, nevertheless more knowledge of the effects of various operative procedures is needed. The treatment of acute dilatation, once the condition arises, remains symptomatic—namely, aspiration of the collected gas and fluid in the stomach (Paine and Wangensteen[7]), together with replacement of the lost fluid and electrolytes, usually by the intravenous route.

[7] *Surg. Gynec. Obstet.*, 1933, **57**, 601.

SKIN DISINFECTION

Much the commonest clinical use for disinfectants is for the sterilization of the skin, yet there is still remarkable difference of opinion about the merits of various agents for this purpose. Some explanation for this is to be found in the great diversity of methods employed for testing them: treated skin has been swabbed, scraped, or actually excised, and cultivated in various ways with or without attention to the pitfalls which beset sterility tests of material still containing disinfectant. The very elaborate method recently evolved by Price has been used with minor modifications by C. A. Hatfield and J. S. Lockwood.[1] This consists first of ten successive scrubbings of the hands each with a fresh sterile brush and a weighed amount of soap powder, following an exact ritual and timed with a stop-watch to last 1 minute, the lather being then washed off with 1 litre of sterile water into a sterile basin. The disinfectant is then applied, and after its action five more identical scrubbings and rinses are carried out. Pour plates are then made with a measured inoculum from each of the 15 basins, and colonies counted. The count per c.cm. of rinse water falls, steeply at first, from an initial 10,000 or so to about 600, and there remains: in other words, further scrubbings continue to remove about the same number of bacteria. Intervening treatment of the skin by an efficient disinfectant permanently depresses the counts, and the last five are then on a much lower level. Tests by this laborious method award first prize to tincture of iodine followed by alcohol, and second to alcohol alone. There is no reason for doubting the significance of these findings, and those who like to conclude from them that old-fashioned remedies are best may do so; but let it be observed that iodine and spirit are both in very short supply in this country at present; we are in fact asked not to use either when anything else will serve. It should also be pointed out that a good disinfectant for normal skin may be a very bad one for a wound, and that whatever spirit may do to skin—and this, by the way, is not to sterilize it completely—it should certainly not be relied on for sterilizing instruments. Various unnamed mercurial "tinctures" whose identity can be guessed gave poor results, and so did a synthetic detergent; but the test was scarcely fair to this, because substances of this class are neutralized by soaps.

Among other recent experimenters in this field F. Neufeld and O Schütz[2] also commend alcohol, but for different reasons. Advocates of the synthetic detergents are many. J. Frankl[3] and E. Gottsacker[4] extol the virtues of "zephyrol," which, it should be remembered, was first introduced by no less an authority than Domagk. Each of these authors stresses the persistence of its action: sweat inside a surgical glove is sterile after two hours' wear if the hand has previously been disinfected with zephyrol. If this is really so it should be the answer to staphylococcal infection of clean operation wounds caused by minute perforations of the surgeon's gloves. Zephyrol (in the U.S.A. "zephyran") has not been seen much in this

[1] *Surgery*, 1943, **13**, 931.
[2] *Z. Hyg. InfektKr.*, 1941, **123**, 396.
[3] *Klin. Wschr.*, 1941, **20**, 864.
[4] *Arch. Hyg. Bakt.*, 1942, **128**, 11.

country, but we now have our own disinfectant of this type in CTAB—cetyltrimethyl ammonium bromide—first favourably reported on by J. M. Barnes.[5] For the disinfection of normal skin, the preliminary cleansing of superficial wounds and burns, and the disinfection of baths, bowls, and certain instruments, such compounds have qualities that should strongly commend them.

Two other ingenious methods of testing a skin disinfectant have been advocated. H. Habs and K. H. Kirschner[6] heavily contaminate shaven guinea-pigs' skin with *Ps. pyocyanea*, treat it with disinfectant, and cultivate multiple excised fragments of skin in broth containing malachite green; this inhibits the growth of skin bacteria but not that of *Ps. pyocyanea*, and thus gives a clear-cut result. W. J. Nungester and Alice H. Kempf[7] go perhaps one better by infecting a mouse's tail with virulent pyogenic cocci, and after disinfectant treatment cut off half an inch and place it in the peritoneal cavity: this test—evidence of bacterial survival being a fatal peritonitis—more often gave a positive result than simple cultivation. The time will perhaps never come when this welter of miscellaneous methods is replaced by a single universally recognized technique for testing skin disinfectants. Medical literature would lose some of its novelty if this were to happen, but the unfortunate user would be able to formulate clearer ideas.

DOCTOR AND PATIENT

It is a common complaint against the hospitals that patients are not told enough about their illnesses and that there is almost a conspiracy on the part of doctors and hospital authorities. What the psychologist calls "channels of communication" become increasingly important and at the same time harder to keep open as an organization grows in size and complexity. In fact communications can be maintained only by persistent and conscious endeavour. A patient attends a hospital for treatment of an inguinal hernia and is found, to his misfortune, to have some lesion of which he was wholly unaware, such as coarctation of the aorta or an early Paget's disease. Before he knows where he is, he is an inmate of a medical ward and is submitted to investigations that have no obvious relevance to his complaint. Finally he is discharged, still with his hernia and naturally disgruntled. Students and housemen need a frequent reminder that they should on no account let a patient out of hospital without making sure that they know what he actually came in for and whether he is satisfied. They should also realize that—with the growth of contributory schemes and payments for services rendered on the one hand, and, on the other, the subvention of medical education by Government grants, research funds, and hospital facilities—it is more appropriate to look upon the medical student as the recipient of charity than the patient. Most consultants would confess that they learn more from their private patients than from their hospital patients. This is often put down to the superior intelligence of the former. Nevertheless, other factors such as expenditure of time and psychological attitude are different, and the student should be taught that the nearer he can get to the private-patient relationship in studying his hospital patients the more he will learn about his art. It is unfortunate that so many medical students have to be trained in large cities such as London, where teaching hospitals have less local responsibility than in smaller cities and where the spirit of an old-established charity still haunts the wards. They get a better discipline in the relationship of hospital, doctor, and patient if they work in a small provincial centre—particularly if they regard the local weekly paper as one of their most important texts. What happens in the hospital is not merely news: it is a major interest of the community. In such a centre the student will learn most rapidly the unwisdom of operating on advanced malignant disease or of carrying out risky diagnostic procedures unless he has made certain that the patient and the relatives fully realize and accept the position. It is easy to be thoughtless of the individual when medicine is organized on the lines of quantity production, as it is in large hospitals and in industrial establishments. And care must be taken that no bafflement or disillusion of the individual taints the health centres and unit hospitals which make such a brave showing in pictures of the future.

The industrial medical officer obviously runs the risk of working across the grain rather than with it in his dealings with the worker. He is peculiarly liable to be affiliated with "they" and "them," those paranoid fantasies on which we all vent our spleen—and will continue to do so whatever "ism" we live under. Just as the primary interest of the hospital doctor is diagnosis, so the primary interest of the factory doctor is maintenance of a low sickness rate. In the one case patients tend to become "clinical material," in the other they become "labour," unless we are always mindful of our professional failings. Yet the industrial medical officer is often justified in his complaints against the private practitioner. One of the main purposes of doctors is to keep people at work, both for their patients' sake and for the sake of the country. It is very wrong, therefore, for a private practitioner to attribute banal symptoms to industrial processes of which he knows nothing, to give long holidays for trivial maladies, or to declare a worker unfit for a particular job on eleemosynary rather than scientific grounds.[1] Medicine has a duty to both the individual and the community, and, whatever state of society we live under, we can never be absolved from the task of bringing harmony between them.

VASCULAR SUPPLY OF NERVES

Hitherto more attention seems to have been bestowed on the nerve supply of vessels than on the vascular supply of nerves. The importance of the latter was, however, fully appreciated by some of the earlier anatomists and physiologists, and W. E. Adams of Leeds has done valuable service in presenting a historical review of the subject in which he discusses the anatomical and physiological findings of early and recent research workers.[2] These provide an explanation for many of the procedures which have been adopted during the last 50 years by such practical nerve specialists as Weir Mitchell, Victor Horsley, René Leriche, François Frank, Harvey Cushing, and others. The anatomical evidence includes observations on the vascular supply of: (1) peripheral nerves; (2) the spinal and cranial ganglia and their roots; (3) the sympathetic nervous system; (4) vascular plexuses around cell centres and nerves in embryos; (5) intraneural plexuses; (6) the innervation by non-medullated nerves of the tunica media of nutrient arteries running in the epi- and peri-neurium, and the termination of some non-medullated fibres in end-

[5] *Lancet*, 1942, **1**, 531.
[6] *Z. Hyg. In ektKr.*, 1942, **124**, 557.
[7] *J. infect. Dis.*, 1942, **71**, 174.

[1] Babey, A. M., *J. Amer. med. Ass.*, 1943, **112**, 395.
[2] *J. Anat.*, 1942, **76**, 323.

bulbs indicating an afferent sensory function for these fibres, the "nervi nervorum" thus being both efferent and afferent—the efferent fibres controlling the calibre of the vessels supplying the nerve and the afferent fibres conveying sensory impulses; and lastly the veins of nerves, which have been specially investigated by Quénu and Léjars.[3] Anatomically the nutrient arteries of the nerves are not end-arteries, there being a continuous longitudinal anastomosis within each nerve. Tonkow also distinguishes between "arteriae nutritiae" and "arteriae comites," though the latter, which may run in or on the nerve, sometimes give off arteriae nutritiae. From the practical standpoint a knowledge of the intrinsic vascular supply of nerves is valuable in relation not only to the regeneration of peripheral nerves but also to the severe symptoms which may follow ischaemia of nerves. Of practical significance, too, is the recognition that the intrinsic arteries of peripheral nerves are separately supplied by prolongations of the sympathetic system and are subject to changes in that system. These changes appear often to underlie such conditions as causalgia, post-traumatic spreading neuralgias, vasoconstrictor and vasodilator disturbances such as Raynaud's disease, angioneurotic oedema, angina pectoris, and some obliterative affections of the arteries and veins. Mayer found that if the facial nerve of the rabbit is devascularized *in situ* it loses its excitability in 15 to 30 minutes. Fröhlich and Tait obtained similar results with the sciatic nerve of the rabbit. Okada produced degeneration of the sciatic nerve of the rabbit simply by dividing the inferior gluteal artery. This experiment, as Adams points out, is significant because it shows that the occlusion of a single regional vessel may exert a profound effect on the nerve which it supplies, and also that this type of degeneration—"ischaemic"—differs from Wallerian degeneration in that there is no actual interruption in the continuity of the axis cylinder. It has also been demonstrated that ischaemia need not be complete before it affects the transmission of both motor and sensory impulses. Moreover, Lewis and others have shown, by the use of a clamp, that revascularization following a localized ischaemia produced by temporary pressure on a nerve is attended by recovery from paralysis and changes in the nerve which are interpreted as the subjective sensation of tingling. Clinical evidence, as well as that furnished by operation on the human subject, thus appears to be substantiated by the anatomical-physiological observations collated by Adams. Further, the curative or alleviating effects claimed for such operations as division of the sensory root of the trigeminal nerve and excision of the stellate ganglion or its infiltration with novocain in the treatment of angina pectoris have their justification.

THE SENILE PUPIL

Rigidity and contraction of the pupil in the aged has a practical significance when dilatation is needed for therapeutic or diagnostic purposes. That the underlying pathological state is sclerosis of the iris vessels is suggested by the occurrence of miotic and sluggish pupils in patients suffering from hypertensive diseases. Larsson and Österlind[4] examined the eyes of fourteen persons aged between 69 and 85 years, and their material formed a continuous series of irides with different powers of pupil dilatation, from absolute immobility to good function. Clinically the changes were depigmentation of the free pupil margin; in advanced cases this goes on to the formation of a structureless, greyish-white, homogeneous membrane. But these changes in themselves are not definitely related to the changes in power to dilate. Histologically sclerosis of the iris vessels was an outstanding feature, and seemed directly proportionate to the degree of pupil immobility. Hyaline degeneration of the free pupillary border and of the connective-tissue layer between the sphincter and the pigment epithelium was present in the more severe cases. Clearly related to pupil immobility were degenerative changes in the sphincter and dilator fibres of the iris musculature. The authors hold that senile miosis is primarily the result of arteriosclerosis; subsequent degeneration of the iris musculature and hyaline changes intensify the condition. Each one of these affections will make normal dilatation more difficult but not impossible. In combination they result in complete immobility of the pupil.

[3] *Etudes sur le Système Circulatoire*, 1894, Paris.
[4] *Acta ophthal.*, 1943, **21**, 1.

TRAINING OF THE ANTHROPOLOGIST

The study of man as a social being has an obvious bearing on the work of reconstruction. Anthropological teaching and research have never yet perhaps received the serious attention which their importance demands. This was largely the theme of Prof. F. C. Bartlett's recent Huxley Memorial Lecture delivered before the Royal Anthropological Institute. So far as university teaching is concerned the Cambridge Professor of Experimental Psychology holds that the training for anthropology should be postgraduate. Human sciences—and anthropology most of all—demand a maturity of outlook and a certain compendious knowledge which can hardly be expected of very young students. In his view the particular school of graduation does not matter very much; in some cases it may well be the school of human experience itself. But he thinks that a special welcome should be accorded to the very best graduate material that the biological and physical sciences can produce, and that efforts to interest this material should be made. Anthropology should seek active working relationships with nearly every other department in the university. It should itself constitute a prolonged experiment in culture contact. Prof. Bartlett went on to indicate three developments which he thinks of vital importance to anthropology. The first is the study of scientific methodology, as important to anthropology as it is to medicine, and for very nearly the same reasons. In both these fields conclusions and decisions have to be made on the basis of behaviour signs which require great skill and insight for their interpretation, and these signs must be interpreted on a basis of scientifically attested knowledge which is constantly and rapidly extending. The second is the manifold use of experiment. Prof. Bartlett wants every anthropological department to have an attached laboratory, or at least to be in very close working relation with suitable laboratories in other departments, so that the student may learn by practice the experimental basis of evidence, the controls necessary and possible in the comparative study of smallish groups, and whatever equipment of tests is likely to help him along his special line of interests. Finally, he said that everybody who is going to be an anthropologist should be encouraged to learn the value, the power, and the limitations of the tools which the statistician can place in his hands. The lecture was a plea for much more thorough organization and research as the basis of anthropological training.

We much regret to announce the death in retirement at Lossiemouth of Dr. John S. Fairbairn, consulting obstetric physician and gynaecologist to St. Thomas's Hospital, formerly Chairman of the Central Midwives Board for England and Wales and President of the Royal College of Obstetricians and Gynaecologists.

REVACCINATION OF AN ARMY UNIT

BY

P. N. COLEMAN, M.B., Ch.B.

Captain, R.A.M.C.

In the description of vaccination in most standard textbooks of medicine little is said of the reaction to be expected on revaccination. It is very important, however, to distinguish the case in which a revaccination has "taken" with a minimum of reaction because of previous immunity from the case in which it has failed because of faulty technique. In a recent pamphlet issued by the Medical Directorate, G.H.Q., India (1942), this matter was emphasized, and it was pointed out that it is very rare even in the revaccination of persons successfully vaccinated several times previously for a reaction to fail to appear. The reaction is, however, evanescent, and might be missed if inspection of the vaccinated area is delayed until the sixth day. The pamphlet describes two types of reaction to be observed in the revaccination of previously immune persons: the "accelerated" reaction, in which a papule appears after about 36 hours, is maximum on the fourth day, and is subsiding on the sixth day; and the "immediate" reaction, in which the papule appears after 24 hours and is maximum in 48 hours. The following account of a case of smallpox which occurred in a British Army unit shortly after arrival in India, and of the subsequent revaccination of the whole unit, illustrates the points made in this pamphlet, and may therefore be of interest.

Sequence of Events

On arrival at the port in India the troops were given shore leave, returning to the ship for the night. The next day they disembarked straight into a waiting troop train, in which they remained for the four-day journey to their new station. Twelve days after the shore leave a private soldier complained to his companions that he felt ill. The next morning he reported sick and was admitted to hospital with vomiting, pains in the limbs, and fever. Three days later a definite diagnosis of smallpox was made, and seven days after his admission to hospital he died from haemorrhagic smallpox. There had been no cases of smallpox or chicken-pox on the ship, so it is evident that he contracted the disease during the period of shore leave. He had not been vaccinated in infancy, but his records showed that he was vaccinated in the Army in 1940. No mark of this vaccination could be found.

The soldier was moving freely within the unit for about 18 hours from the time he first felt ill to the time of his removal to hospital. The entire unit of 938 men were regarded as possible contacts; the more probable contacts, however, were the 129 men of the man's own company, who all lived together in one barrack block. Precautions taken were the isolation of the company concerned, disinfection of all fomites, and the revaccination of all contacts. All the men of the company were revaccinated on the day notification of the case of smallpox was received—i.e., four days after the man first complained of feeling ill—and on the following day the rest of the unit were revaccinated. No further cases of smallpox occurred.

Vaccination State of the Unit on Disembarkation

According to their documents all the men had been vaccinated within the previous five years—47 men in 1939, 713 in 1940, 56 in 1941, and 122 in 1942. They had arrived in the unit from many different parent units over a period of three years; thus their vaccination had been carried out by many different medical officers in many different stations.

Response observed to Revaccination

As vaccination had been carried out within five years the full classical response to vaccination was not expected to occur in many cases. The arms were therefore inspected at 48 hours, 96 hours, and 6 days after vaccination. The results of a total of 938 vaccinations are given below.

In 656 cases (70%) the sequence of events was as follows: After 48 hours there was already quite a definite reaction. The region of the insertion showed a slight yellow exudate, surrounded by a red area about a quarter of an inch across. In 96 hours the red area was well marked, with a dried yellow exudate over the insertion but no true vesiculation. On the sixth day the reaction was fading rapidly, and in many cases all that then remained was a small dried-up exudate over the insertion. This is the "immediate" reaction described in the pamphlet. In a further 204 cases (22%) no definite reaction was observed after 48 hours, but the reaction had become quite definite after 96 hours, and was of the type described above. It was fading rapidly by the sixth day, and never showed the classical response. This is the "accelerated" reaction described in the pamphlet. In 31 cases (3%) there was never at any time a very definite response, though even in these cases an area of erythema was observed after either 48 or 96 hours. These cases were regarded as giving a doubtful response, and vaccination was repeated.

Finally, inspection on the sixth day showed that 47 cases (5%) went on to the full classical response to vaccination. These had well-marked vesiculation going on to pustulation, a wider area of surrounding erythema, and axillary adenitis. Of these cases 18 developed a mild fever and had to be excused duty for a few days, though in no instance did any serious symptoms occur. The time taken for the classical response to develop was interesting. On examination after 48 hours, out of 47 cases which later gave the classical response only 11 (22%) were showing the signs of reaction, whereas out of 860 cases which gave the modified reaction 656 (76%) were already showing signs of reaction. Thus the modified response develops more rapidly and fades more rapidly than the classical response.

Discussion

The value of vaccination in protecting a community from smallpox was once again demonstrated. The occurrence of a fatal case in a man apparently vaccinated three years before was unexpected and disappointing; on the other hand, the man was walking about freely among his companions, in the close conditions that barrack life entails, for 18 hours during the prodromal stage of virulent smallpox, yet no further cases occurred.

The number of completely negative responses to revaccination in a community previously vaccinated within five years was found to be small (3%). But in order to observe this it was necessary to inspect arms at 48 hours and 96 hours after vaccination as well as after 6 days. It is safer, therefore, to regard non-appearance of reaction as evidence of faulty technique, and to repeat vaccination, than to regard it as evidence of a solid immunity. Even after a large number of vaccinations the number of such repetitions will be small.

The proportion of cases which showed the classical response (5%) seemed surprisingly high. Presumably this meant that these cases were relatively non-immune. To what extent this was due to an abnormal rapid fall of immunity since the previous vaccination or to a faulty technique at this vaccination it is difficult to say. It suggests that on entry into an area in which smallpox is endemic it might always be advisable to revaccinate, whatever the record of previous vaccinations.

REFERENCE

Medical Directorate, G.H.Q., India (1942). *A Note on Vaccination.*

Nova et Vetera

EDWARD TYSON, M.D., F.R.S.: 1650-1708

A MODEL BIOGRAPHY

Dr. Edward Tyson has had to wait a long time for his biography, but he now has his reward.[1] If it be, as his biographer maintains, that the monograph he presented to the Royal Society on the anatomy of the chimpanzee in the summer of 1688 set a new model for anatomists, then it is only just that the Life now written should be a model for all medical biographers in the future. It is a model biography that has come from the pen of Prof. Ashley Montagu, who is anatomist at Hahnemann College, Philadelphia, and has made many contributions to his subject, particularly to the comparative anatomy of man and ape. Ashley Montagu, however, is much more than an anatomist. He is a man of letters, with a vivid pen and a love of books; he has enthusiasm and industry. He has searched the records of the Tysonian period for every scrap of information.

Tyson, who died a bachelor, was born in Bristol, spent ten years at Oxford University, took his M.D. at Cambridge, and came to London to practise medicine in 1677. Two years later he was elected to the Royal Society, in the proceedings of which he took a very active part, his contributions being chiefly medical and anatomical. At the age of thirty-four (1684) Dr. Tyson was appointed to two offices: he became reader in anatomy at Surgeons' Hall and was appointed physician to Bethlehem and to Bridewell

[1] *Edward Tyson, M.D., F.R.S., 1650-1708, and the Rise of Human and Comparative Anatomy in England.* A Study in the History of Science. By M. F. Ashley Montagu. With foreword by George Sarton. (Pp. 488. $5.00.) Philadelphia: The American Philosophical Society, Independence Square. 1943.

Hospitals. His biographer claims for him that he was the first to give systematic courses in anatomy in London, that a modern lecturer could use his syllabus, and that he was the founder of modern comparative anatomy; he also claims that at Bethlehem Hospital Dr. Tyson was the first to use humane methods in the treatment of the insane.

Tyson's first paper, written while he was still at Oxford (1676), was on "The Scent-Bags in Poll-Cats"; years afterwards, when at Surgeons' Hall, he discovered and described the smegma glands of the human foreskin, which are still known as Tyson's glands. "It is a curious reflection," writes his biographer, "not without a certain moral, that in the world of medicine, to which he made so many highly important and original contributions, Tyson should to-day be remembered alone by the least important of his discoveries." Of his numerous contributions to knowledge, Prof. Ashley Montagu places the monograph published in 1699, when Tyson was in his fiftieth year, far above all the others; its full title runs thus: "Orang-Outang, sive Homo Sylvestris: or, The Anatomy of a Pygmie; Compared with that of a Monkey, an Ape, and a Man. To which is added, A Philological Essay, Concerning the Pygmies, the Cynocephali, the Satyrs, and Sphinges of the Ancients. Wherein it will appear that they are all either Apes or Monkeys, and not Men, as formerly pretended." The biographer gives a vivid account of how his attention was drawn to this monograph, and of how he was drawn into writing a Life of its author. In 1923, when Ashley Montagu was a free-lance student in London, and when the reviewer had the pleasure of meeting him frequently in the museum of the Royal College of Surgeons, he (A. M.) came across, in a work written by Dr. Duckworth, now Master of Jesus College, Cambridge, the following passage: "It constitutes a most remarkable anticipation of modern methods of research, and still serves as a model for investigations into the structure of Man and Apes." On reading this passage Ashley Montagu was moved to ask: "What kind of man could this have been who was responsible for so remarkable a work?" He resolved "at some leisured time to make his more intimate acquaintance." To his surprise he found there was no biography of Tyson, so he "resolved to put Tyson together" for himself. He set to work on Tyson in 1936; thanks to the enlightened liberality of the American Philosophical Society, he was given opportunities of examining with his own eyes all Tysonian material available in the United States, and to visit England, on the eve of war, and examine documents preserved in Bristol, and those to be found in the archives of the Royal Society and in the Royal College of Physicians of London. Out of these gatherings Tyson has been brought back to life.

A. K.

INFORMATION ABOUT CANCER

Ever since the British Empire Cancer Campaign was founded one of its most important duties has been from time to time to review new suggestions about the cause and treatment of cancer. In the past the conclusions arrived at have not always reached the medical profession. To-day it is more than ever important that medical men should be able to obtain authoritative information on suggested remedies and theories of causation. The Campaign, therefore, will be willing to communicate its opinion on any new form of treatment on which it has information. It will continue to investigate methods of treatment and theories of causation, and is willing to undertake or to promote research into such subjects, provided the following conditions are fulfilled:

1. That in the opinion of the appropriate expert committee of the Campaign such a subject offers any prospect of advancing the solution of the cancer problem.
2. That the fact that a theory or suggested treatment is being investigated by the British Empire Cancer Campaign shall only be disclosed with the consent of the Campaign.
3. That the Campaign reserves to itself the right to publish, in an appropriate manner, the conclusions reached, whether favourable or otherwise.
4. That in the case of theories concerning causation all available information shall be furnished by the advocate of the theory on the scientific basis and the experimental data, which shall be so detailed that exact repetition of the experiments can be carried out by experts in the field of research concerned.
5. That in the case of methods of treatment the precise nature, composition, and method of administration of the suggested remedy shall be disclosed, and that the evidence shall be collected in accordance with the safeguards as to scientific accuracy which experience has shown to be essential—namely: (*a*) That cases shall be of proved cancer, in so far as proof is practicable, preferably by histological examination. For choice, they should be cases affecting so-called "accessible" organs—e.g., skin, breast, cervix uteri, and mouth. (*b*) That every case treated shall be recorded whether the result is favourable or otherwise. (*c*) That the clinical records, including follow-up, shall be as full as possible.
6. That in the case of a treatment based on experiments the Campaign reserves to itself the right to confirm the results of such experiments before attempting clinical trials of the remedy.

The Campaign will be happy to arrange for medical men to discuss their hypotheses and experiences with appropriate experts in the field concerned. Its address is 11, Grosvenor Crescent, S.W.1.

DEFERMENT OF RECRUITMENT OF LABORATORY ASSISTANTS

The attention of pathologists is drawn to the fact that, under the special block procedure arranged with the Ministry of Labour by the Medical Research Council, skilled laboratory assistants are granted deferment on the ground that they are indispensable in the particular posts held: deferment therefore automatically ceases if they change their employers (but not if they are merely moved from one post to another within a single service).

If it is desired to appoint a pathological laboratory assistant who has been granted deferment in respect of another post, the prospective employer should ascertain from the Medical Research Council, before the change is made, whether deferment could be continued: if the transfer is thus approved, then the Ministry of Labour will be asked by the Council to take the necessary action. As a general rule a second transfer in respect of the same man cannot be approved within a short period. (Deferred laboratory assistants whose employers are in a position to release them for transfer may be recruited in their occupational capacity if urgent demands from the Services have to be met.)

Reports of Societies

A CANADIAN NEUROLOGICAL HOSPITAL

CLINICAL EXPERIENCES BY MEMBERS OF THE STAFF

At the meeting of the Section of Neurology of the Royal Society of Medicine on Jan. 6 members of the staff of the Canadian Neurological Hospital in England recounted some of their clinical experiences.

Lieut.-Col. J. C. RICHARDSON explained that the development of the hospital and of the neurological services of the Canadian Army had taken place in response to needs not foreseen when the hospital was first opened in 1940 with 200 beds for the treatment of head injuries. The hospital had expanded steadily, and by July, 1943, reached its present establishment of 600 beds. Of this number 150 were devoted to a plastic surgery unit and 250 to the neuropsychiatric division on which his remarks were based. During the first year most of the consultant and advisory work was done from the hospital itself; afterwards a consultation centre was established in London, and later still a number of specialists, after spending three months in the neurological hospital, were sent to field medical units and general hospitals, and one physician from each general hospital was attached to the division for from one to three months, so that the medical staff was constantly changing.

The vast majority of the patients were Canadian soldiers, but a considerable number were Canadian airmen, and there were a few civilians and British Service cases. Mild or severe mental disorder comprised 70% of the cases, neurological disorder without permanent mental disturbance 19%, and general medical disorders 8%. This analysis was based on discharges rather than on admissions. The largest group (1,625 out of a total of 4,426 cases in the course of three years) comprised psychoneuroses, about half of this number being anxiety states. Cases of psychopathic personality numbered 646, psychosis 507 (chiefly schizophrenia, with 355 cases), and mental defect 306. Of the cases of neurological disease (828) the largest number (275) were cases of epilepsy, and the next most numerous neurosyphilis (117).

Organization of the Division

The local organization and methods of the hospital unit had developed as seemed to be required by the nature and number of the cases. Until recently the neurosis cases and the organic neurological cases had been mixed together, and although the

cases of psychosis were segregated the organization proved to be unsatisfactory for investigation and disposal; it also hampered treatment and was not wholly satisfactory for teaching. When in 1943 facilities became available the division was reorganized. The seven wards of the division were allotted to three units. The two closed wards for psychotics and psychopaths remained segregated; two wards were allotted to the neurological unit and three to the neurosis unit. This last unit was the most important from the practical military standpoint, from 55 to 60% of the cases being returned to duty. The cases were admitted to the first ward, which was for the clinical and laboratory investigations and the separation of chronic neurotics. They were then transferred to the second ward, which was for treatment, and finally they were sent to the third ward for training or rehabilitation, where they were handled as soldiers rather than as patients. From this they were discharged to duty—to the field or the base—or sent back to Canada. A rotation scheme was devised so far as the staff were concerned, so that the medical officers gained experience of all kinds of cases.

The experience of the hospital was that neurology, psychiatry, and neurosurgery, planned as different components of one broad field of medical practice, offered the advantage of co-operative handling from the point of view of clinical investigation, diagnosis, treatment, and postgraduate training, and helped to break down the artificial barrier between the neurologist and the psychiatrist. Neuropsychiatry had been called upon to play a far larger part in the selection of troops and allocation of personnel, including choice of candidates for commissions, than was originally anticipated, and it seemed likely that the experience of this military neuropsychiatric division would be of lasting value in planning improvements in teaching hospitals and in directing attention to the psychiatric aspects of somatic illness.

Brig. GEORGE RIDDOCH said that this experiment, carried out under Canadian leadership, would have an immense influence on planning in the future. The term which best described the hospital was "common sense." Air Commodore C. P. SYMONDS added some appreciative comments, and said that in the R.A.F. the proportion of organic nervous diseases to the psychoneuroses was about the same as that mentioned by Col. Richardson. Sir HENRY TIDY spoke in praise of the liaison between neurology and psychiatry which existed at this hospital, and added that it would be to the mutual advantage of psychiatry and general medicine if they were as closely in touch. A New Zealand medical officer commented upon the small proportion of cases of migraine (only 26 cases out of the 828 listed as neurological diseases), and also upon the rarity of malingering. Col. Richardson had said that only three patients were classed as malingerers, and in one of these the classification proved afterwards to have been mistaken.

The remainder of the meeting was given over to short papers by members of the staff of the hospital. Major W. S. KEITH gave a report of two cases of staphylococcal infection in which the patients suffered a severe paraplegia about six years afterwards owing to spinal extradural scars. Major B. C. EAGLESHAM brought forward a neuroradiological exhibit. Major A. W. STEWART described some contrecoup lesions in relatively severe cranio-cerebral injuries. In each case the local injury was a moderately well demarcated wound.

Major J. A. WALTERS spoke on some aspects of the treatment of Parkinsonism, basing his remarks on a clinical study in the out-patient department of a voluntary hospital in Toronto. The influence of mind over matter was illustrated in these cases, which showed how the total integration of the many elements in the life of the human being must be kept in mind. It was found that the health and vigour of 44 out of the 47 patients were being reduced by circumstances which could be identified from clinical history and examination. Another finding was that the post-encephalitic group lost their personalities to a certain extent, while the paralysis agitans cases preserved theirs to a far greater degree. The Parkinsonian signs and symptoms were observed to vary in some cases with the patient's psychological state, while in others they appeared to be unaffected. Specific psychotherapy was valuable in most cases; simple explanation, encouragement, and reassurance called for the physician who knew what was wrong and could gain the confidence of his patients, and most of these patients could be managed by the family doctor better than by the hospital or consultant.

An association known as the British Association of Otolaryngologists has been formed. The officers are: President, W. M. Mollison; Vice-President, L. Colledge; Hon. Treasurer, V. E. Negus; Hon. Secretary, F. C. Ormerod. The temporary address of the Association is 22, Upper Wimpole Street, London, W.1. Tel.: Welbeck 4017.

The following officers of the Joint Tuberculosis Council have been elected for 1944: Chairman: Dr. James Watt; Vice-Chairmen: Drs. D. P. Sutherland and N. Tattersall; Honorary Treasurer: Dr. A. P. Ford (in succession to Dr. G. Jessel); Honorary Auditor: Dr. D. P. Sutherland; Honorary Secretary: Dr. Norman J. England (in succession to Dr. J. B. McDougall). The next meeting of the Council will take place in London on Feb. 19.

Correspondence

Infant Mortality in Scotland

SIR,—The long-awaited report on infant mortality in Scotland is a disappointing document. Throughout its 85 pages there are but few new facts or ideas. And there was so much new material to be considered, such as the whole impact of the war on diet, housing, and employment, and the great number of oversea experiments and ideas which needed to be translated into Scottish terms. Sir John Boyd Orr's committee has missed a great opportunity. The measure of the manner in which the committee has limited its field is contained in the phrase on page 3: "The committee has confined its attention to pre-war conditions, except in the discussion of stillbirths." This is a most extraordinary statement when one considers not only recent advances in the United States, New Zealand, and Australia, but more so when one considers the impact of evacuation, war feeding, the practical temporary abolition of poverty, and the shortage of fuel—all environmental factors of some importance. There is scarcely a phrase in the whole report to indicate that these issues have been considered.

Even in the field that is covered there are some curious statistical errors. On page 8, for example, South Africa is credited with an infant death rate of 58. This figure applies to the white population only, and not to South Africa generally. Again, on page 30 reference is made to Table 20 on the previous page, but table and text by no means agree. The text also goes on to say that statistics relating to the percentage of the insured population unemployed in English cities are not available. My impression is that they are available in the Ministry of Labour Unemployment Index for the years required (1934–9). Another astonishing statement, on page 61, is that "the rich both in England and Scotland have infantile mortality rates approaching the limit of what is attainable with present knowledge of how to control environment." Considering that the English rate for "the rich"—i.e., Class I on page 16—is 33 per 1,000, and the rate for Scotland demonstrably higher, it is obvious that these figures will have to be halved before they approach the Dutch or New Zealand figures for comparable classes. No mention is made in the report of the extremely low infant death rates in Connecticut, Oregon, or even Minnesota.

The bibliography also shows significant gaps. There is no mention of any Dutch publications or of the work of K. D. Blackfan, C. P. Yaglou, or K. McKenzie, whose research work in the United States surely deserves some notice. Again, no mention is made of the *American Journal of Diseases of Children*, or of the Beveridge report, which has a useful commentary on environmental conditions.

These errors and omissions could perhaps have been overlooked if the committee had shown a little initiative, but it is only too apparent that the nutritional blinkers of the chairman have covered the viewpoint of the entire committee. Over a third of the report deals with pre-war nutrition, and some passages, such as Tables 60 and 61, appear to have been dragged in at the last moment without any attempt to analyse them, or to show in what way breeding experiments in rats may help to reduce infant mortality in Scotland.

The committee's main conclusions are that prematurity and "congenital debility" are mainly responsible for the excessive mortality of the first month, and that infectious diseases, which in turn are due to "poverty, faulty feeding, and poor housing," are the main cause of the high death rate between the first and twelfth months. Two-thirds of the stillbirths are due "to poor physique and poor health of mothers." Prematurity is "the most frequent single cause of death in the first month," but there is no mention of the extensive research carried out in this connexion by the Infants Hospital, Boston, Mass., which showed that in temperatures of 77°, and even higher, and with relative humidities of about 65%, the mortality of premature infants was reduced from 29% to 0.7%. The committee recognizes the importance of providing energy for mother and infant by proper diet, but it does not recognize that it is equally important that there should not be undue loss of energy through too cold an environment. At the moment of birth the infant passes from 99° to 50° or even 40° F. The shock of such a change to a grown man is severe enough, but to an infant it may well be the fundamental cause of death through this, that, or the other disease in a few days. For premature and, indeed, most newly born infants better chances of life are created by maintaining a uniform environmental temperature of 72° and even slightly higher.

Regarding environmental conditions generally, there is not a helpful suggestion in the report. Indeed the committee takes the view that "if climate has any important effect on infantile mortality . . . it is more than offset by other influences." This is an incredible statement when one remembers that the mortality in winter is *twice as high* as that in the summer. Scotland is on the average 5° colder than Southern England, yet, as Sir William Beveridge brought out in his report, the average Scottish household of 3 to 5 persons spends 13% less on coal, gas, or electricity (Table VIII). It is considered heroic and economical to be Spartan in Scotland, which is hard on the pregnant or nursing mother, and doubly hard on the infant. The committee admits (page 63) that clinics are often "ill lighted, badly ventilated, and dingy; insufficiently heated, cramped, and without facilities for lectures and demonstrations." But the report makes no recommendation that would remedy these faults.

It is particularly to be regretted that the committee has not considered in detail the statistics or environmental conditions of 1940–1–2 and even 1943, for in those years there was singularly little unemployment or poverty in Scotland, and diets have been "Wooltonized" to a degree; but the infant death rates are still excessively high, that for 1941 being 83 per 1,000 and that for 1942 69 per 1,000, both of which are higher than the 1939 rate. The English figures for the same two years are 59 and 49, the latter being the lowest on record, in spite of housing difficulties of an unprecedented degree.

The committee has skimped its job. The Secretary of State for Scotland would do well to appoint a new Commission or committee to consider infant mortality problems in Scotland from an angle other than that of nutrition, and he would do extremely well if he instructed the new committee to consider at first hand recent developments and investigations in the U.S.A., New Zealand, Australia, and even Hertfordshire.
—I am, etc.,

S. F. MARKHAM, M.P.

Sciatica

SIR,—Anyone who reads in succession Mr. Harry Platt's interesting historical survey of the orthopaedic approach to the aetiology and treatment of sciatica, Mr. Ross-Smith's conclusions from an experience of 7,000 cases, and Dr. Cyriax's statement of his views as a pioneer in physiotherapy will find himself in such a fog of fact and fantasy that the need for debunking will appear more necessary than ever. Dr. Cyriax gives a list of the many "common lesions setting up unilateral sciatica," each with its appropriate treatment. Excluding "functional pain," which he cannot seriously regard as a "lesion," they are almost all hypothetical, having no actually observed pathological basis. What is "non-frictional sciatic periradiculitis"? What evidence is there that unilateral sciatic neuritis ever results from "poisoning with a heavy metal or alcohols"? What is the clinical difference between gluteal myositis and gluteal fibrositis, and is there any evidence that actual *inflammation* of muscle or fascia exists in these conditions? If it did, would not deep massage be the worst possible treatment?

Mr. Ross-Smith appears to think that I regard sciatica as purely hysterical in origin. I don't. I believe that almost all cases have a physical basis at the onset, though this is often trivial and generally disappears rapidly with treatment by rest alone. There is, however, a great risk that the pain will be perpetuated as a hysterical symptom as a result of associated psychological causes. This can be prevented if treatment by rest is accompanied and followed by simple psychotherapy in the form of explanation, persuasion, and re-education (now commonly called rehabilitation), without resort to suggestion, whether conscious or unconscious, in the form of some kind of "specific" treatment.

It is not surprising that Mr. Ross-Smith has a poor opinion of psychotherapy in view of his belief that the first step in such treatment is to tell the patient that his pain is imaginary. He regards the diagnosis of hysteria as "absurd and unkind," although it entails a certainty of rapid cure. It is of course both absurd and unkind if hysteria is regarded, as Mr. Ross-Smith apparently regards it, as synonymous with malingering. Like Mr. Ross-Smith, I have seen epidural injections of novocain give relief, but whereas he is sure its effect is not psychological, I am equally sure that it is. William Evans, who invented the treatment, found that normal saline solution was as effective as novocain, and I soon found that epidural injection had no advantage over the older treatment by injection in the neighbourhood of the nerve trunk. Such methods of gross suggestion do no harm; but this is not the case with the "elimination of remote focal sepsis," which Mr. Ross-Smith advocates, for the wholesale extraction of septic teeth often does irreparable damage, and there is not the slightest evidence that focal sepsis is ever a factor in the pathogenesis of sciatica. It is astonishing that Mr. Ross-Smith recognizes disk compression as the cause of pain in only 2% of cases, whereas all neurosurgeons and most orthopaedic surgeons and neurologists would put the figure at 20% at least and probably much higher.

Finally I should like to draw attention to the important investigations of Major F. A. Elliott published in the *Lancet* since the appearance of my paper. He has shown that a prolapsed disk may give rise to myalgic areas in muscles supplied by the compressed roots which are indistinguishable from those caused by so-called fibrositis both clinically and in their response to procaine injections. It seems likely, therefore, that some of the cases of sciatica hitherto regarded as of fibrositic origin are really caused by disk pressure.
—I am, etc.,

Oxford. ARTHUR HURST.

P.S.—The above letter was written before the appearance of the *Journal* of Jan. 22, in which Mr. Blundell Bankart gives good reasons for disagreeing with the views on the aetiology of sciatica expressed by Prof. Harry Platt, Mr. Ross-Smith, and Dr. Cyriax, but no good reason for accepting spinal arthritis as the most common cause. Dr. George Macdonald ascribes his successful treatment by manipulation to his superior technique, though I expect it is more the unconscious suggestion which accompanies it than the actual manipulation which is the secret of his success. Dr. C. H. C. Dalton's views on treatment are much the same as mine, except that he treats the hysterical sequel of the primary lesion by short-wave suggestion instead of a more rational, though not necessarily more successful, form of psychotherapy. He wisely emphasizes the fact that the exertion of travelling to the treatment room more than outweighs the beneficial effect of any form of physiotherapy in the acute stage of sciatica.

A. H.

SIR,—From the correspondence on this subject it transpires that many favour the thesis that at least a majority of cases of sciatica originate through some form of oedema or fibrosis around the lumbosacral nerve roots. For several years I have been injecting small doses of local anaesthetic into the foramina, where acute tenderness is produced by deep pressure

in the foramina by means of a probe. A match-stick does excellently, and leaves behind it a small pink spot into which the hypodermic needle is inserted to a distance of one inch or so. Up to 800 cases have been treated thus with really satisfactory results. This treatment is always reinforced by forcible active exercises, thereby avoiding, in nearly every case, passive manipulations. Furthermore, determined patients who persevere with the exercises for the rest of their lives do not suffer from recurrences. My own is a case in point.—I am, etc.,

Reading. A. H. PRICE.

Suggestion

SIR,—Thought and belief have much in common, but there is a distinction between them though the words are often used as synonyms. "I think" or "I believe so-and-so" is just a matter of taste in words. There is a close correlation in many ways, but they are not the same. If I believe a thing, I must think it true, but the converse is not necessarily the case. Tertullian declared that he believed because it was impossible. He was speaking with the religious insight vouchsafed only to the ecstatic. Few can travel with him there, but it is not so difficult to have a notion of what he meant. Thought is probably a function of the cerebrum, though where therein, if anywhere, it is localized is a matter of surmise. Belief, in a way not understood, is probably diffused throughout the cells of a living organism. We can hold a belief in our bones.

Suggestion is a matter of belief and not thought. We cannot add to our stature by taking thought, but much can be done by faith. In Biblical times pathology was different from nowadays. Disease was attributed partly to demoniac possession. Those able to expel the demon would cure the illness. Three things were necessary: (1) a belief in this view of disease; (2) a belief by the exorciser in his power; and (3) a belief in him by the sufferer. There is no need to consider any miraculous intervention, though this may have been the explanation. Many apparently parallel cases exist. The aboriginal black in Australia attributes disease to the presence of a foreign body within him, not unlike a demon. The all-powerful and much-respected medicine man treats him by means of a ritual dance, appropriate incantations, and the removal of a foreign body—a piece of crystal. He has brought the crystal in the equivalent of his waistcoat pocket. But there is reason to believe that no fraud is practised. The primitive black with his acute powers of perception knows that the crystal has been brought by the medicine man. It is a symbol of the indwelling evil, and this has been extirpated by the appropriate rites. Once again the same three principles are operative. Wide is their application. Suggestion is the name given to the process, but little else that is helpful is forthcoming.

Often almost contemptuous is its dismissal as "only suggestion" by those thinking of the complicated dexterity required by a modern major operation. The apotheosis of the barber has gone too far. Hair-cutting and blood-letting is too limited a field, and there can be no question of the miscellaneous virtues of the modern surgeon, but abetted by the marvels of the anaesthetist he has tried to do too much. Suggestion, so contemptuously dismissed at the front door, has come in through the window. The scene is familiar though the setting is different. The ritual of an operating theatre replaces that of the medicine man. Maybe a gastro-enterostomy is to be performed for a duodenal ulcer without pyloric obstruction. After a tedious convalescence a full recovery is made, and perhaps for many years the patient is free from all symptoms. He is confident that he has been cured. How has this come about? The theory on which the operation is based is completely irrational, but both the surgeon and the patient believe otherwise. This operation has latterly lost much of its popularity, but there are many to compensate for this. A favourite now, to judge from recent correspondence in the *Journal*, is an attack upon the lower vertebral cartilages in cases of sciatica: quite a considerable procedure.

Turning to the physician's side of the healing art, something of the same kind of thing is found. Autohaemotherapy for, say, recurrent urticaria is a good example. A stutter of theory, a grandiloquent name, a remarkable procedure, and the mantle of Aesculapius, perhaps in the shape of a white coat, are not to be withstood. It can rarely occur to the patient that his doctor does not know what he is doing. The same absence of rationality characterizes another and very modern form of treatment. Shock or convulsive therapy is its name. First used for mental disorders, it is now employed for a variety of nervous illnesses. "Shake the bottle" we stick on to some of our mixtures. At least we know what we are shaking. The exponent of shock treatment makes no such claim. Much electrical equipment is often visible and that may be a clue to its success. Psycho-analysis is another example. From a mass of recondite pornography the valuable conception of the unconscious mind must be separated. Loud are the protests that suggestion plays no part in the curative processes—too loud, I think, and the unwarranted assumption is made that what has been laboriously disinterred from the unconscious will cease to operate adversely when it has become conscious. A long course of treatment is involved, and the surrogate of the medicine man has plenty of scope for his talents, not to mention the time given to the *vis medicatrix naturae*.

All these forms of treatment claim that they cure their patients. Perhaps they do. But others make the same claim, and if one relies on the same kind of evidence they also probably do. The list is a long one. It includes Christian Science, faith healing, chiropraxis, osteopathy, homoeopathy, patent medicines, and many others. Their diversity suggests that the factor already considered is operative. If suggestion is so powerful should not an attempt be made to control its protean guises? With so much talk of preventive medicine current it is a melancholy reflection that one cause of death is very rare—so rare in fact that its acceptability to the Registrar-General is doubtful. Yet there is much to be said for it, and it is what we should like all our patients to die from with the "inevitability of gradualness" in the plenitude of their days: death from old age.—I am, etc.,

London, S.W.1. E. GALLOP.

War in the Nursery

SIR,—The anonymous article under this title (Jan. 8, p. 50) was a curious one. It seemed designed to make the flesh creep, and caused one to wonder how so many survive this ordeal of battle which is said to attend the beginnings of human existence, and succeed in developing into comparatively normal beings. It may be, however, that there were half-truths, exaggerations, and omissions in the descriptions, whose object apparently was to cast suspicion on the usefulness and desirability of children's nurseries.

Only a vague reference was made to mother-substitutes, who, in the persons of child-nurses and "nannies," have taken a large part of the mother's place in many well-appointed homes. There was a complete omission also to take into account the psychological effect on both mother and child of an overworked and tired-out woman struggling throughout the twenty-four hours with a young family, with no domestic help, and with cooking, washing, etc., to do. It is conceivable that a qualified member of a nursery staff, loving babies and adopting by choice a difficult and not-too-well-remunerated vocation, may make an effective temporary mother-substitute, and be able to win the co-operation of the child in all that concerns its welfare. It is also true, and nurseries are not unhappy places but the reverse, where the conditions are what they can and should be.

We must hope that mothers of young children will not be employed in post-war industry. It is certainly desirable that the mother should have the nurture and welfare of the child in her care. But experience shows that occasional breaks are good for both mother and child, and that they increase rather than decrease the sense of parental responsibility. It is permissible to hope, therefore, that our war nurseries will be transformed into extensions of child welfare service, to be available for a few hours' rest, for cases of illness in the home, a new confinement, or any other domestic disturbance, which at present bring anxiety to the mother and, it may be, unavoidable neglect of the child.

The reflections on the war situation in this article were also surprising. It is a far-fetched assumption that infants are aware of and directly affected by "the destructive impulses let loose in war," and that these "may serve to fan the flame of

aggression natural to the nursery age . . . provoking further fear and reactive resistance to a world so dangerous."

Psychological theorizations must be balanced and be seasoned with common sense and a sense of humour if they are to be helpful to those engaged in public or personal service.—I am, etc.,

London, S.W.1. T. DRUMMOND SHIELS.

SIR,—Your recent annotation on war in the nursery (Jan. 8, p. 50) makes me wonder if your criticisms are quite fair to the wartime nurseries. I feel that the best type of nursery education is desirable for the great majority of children, and that there is a real danger to the whole nursery movement in substituting the wartime nursery and the nursery class for the fully equipped, properly housed, and adequately staffed nursery school. I wonder if the writer realizes the difficulties that beset the wartime nursery from the outset? Only one fully trained teacher is allowed for a group of nurseries, and the actual work among the children is carried out largely by probationers wholly untrained, or by girls who have taken the Child Care Reserve Course of *three weeks'* duration, for a trained deputy is not always allowed. Obviously the selection of probationers is of paramount importance, but the Ministry of Labour may not view this in the same light as the teacher. Skilled help is essential if the potential scenes your article so deplores are to be avoided, and the teacher has to train her helpers *pari passu* with their employment in the great majority of cases.

The second great difficulty in the wartime nursery is equipment. Admirable domestic equipment is provided, and the children can be comfortably seated, fed, and rested without difficulty, but these manœuvres occupy only a fraction of the nursery day. A sum of £15 is allowed for the provision of *all play material* for forty children, and recently a replacement allowance of 2s. 6d. per head has been granted! The teacher has to beg, wangle, or buy her own material if she wants her nursery to have a chance of success. The work of the Fire Service and of other voluntary bodies has been a great help to these nurseries. Is it fair in the midst of all this to compare these nurseries with well-equipped, skilfully staffed nurseries and expect comparable results in every case? A high incidence of unhappiness is never a necessary accompaniment of any nursery that has the children's activities adequately provided for.

The position of the under 5's in the elementary school is often much more unsatisfactory than that of the nursery child. Children may be admitted to these nursery classes from the age of 3 onwards, and often no special nursery technique or material is available for them. The classes are often overcrowded and understaffed, and the harassed teacher may have as many as fifty children without a helper. How can she possibly put any of her nursery principles into practice? She must rely on old formal measures to avoid chaos. Now the teacher is expected to add to her other duties the giving of vitamin supplements and iron tablets, which the children certainly should have.

That there are unsatisfactory nurseries is no doubt true, but is it altogether surprising in the face of these difficulties? That there can be successful nurseries is equally true, as I know from my own experience, but in these the children's needs are all catered for, and this means, above all, skilled help.—I am, etc.,

Scarborough. ELIZABETH R. CAMERON.

Effect of Pregnancy and Parturition on Pulmonary Tuberculosis

SIR,—Dr. R. S. McDade's letter (Jan. 15, p. 98) regarding my paper on this subject raises points which I do not think would have arisen had paper restrictions not precluded the publication of the summarized case records that I had prepared, and I am grateful to him for providing this opportunity of elucidating them.

I am not influenced by the fact that my conclusion that "active pulmonary disease is seldom accelerated by pregnancy and labour" conflicts with generally accepted beliefs, but I do wish to convince Dr. McDade (and possibly others) that this conclusion does not conflict with my own results. To this end may I be allowed to supply the following information?

While it is mainly true that only "treatable" cases are admitted to the E.C.C. Hospital, Black Notley, this is a generalization, not a rule, and no selection was exercised in respect of the pregnancy cases. Of the seven "progressive" cases which showed retrogression and to which Dr. McDade refers, three patients were admitted with hopeless extensive and bilateral disease. One other had extensive bronchopneumonic disease for which a pneumothorax was induced early in pregnancy, and a small focus appeared in the opposite lung 4 weeks after labour; 1 year and 9 months after labour both sides were quiescent. The remaining three patients had disease confined to one lung before labour and showed radiological increase after. One of these became quiescent 3 months later. Among the eighteen active cases which did not retrogress nine had active bilateral disease on admission; seven improved and two were ultimately discharged quiescent. Nine had active unilateral disease; five improved and four were ultimately discharged quiescent.

I must in turn criticize Dr. McDade for citing percentage figures on seven out of twenty-five cases. In my paper I pointed out that 100 cases could only be taken as representative and are not statistically significant; he is not justified in comparing such small numbers of unselected pregnancy cases with the large numbers of "active," largely selected, non-pregnant cases which pass through our sanatorium wards.

Finally, lest he think that I would never advise termination of pregnancy in cases of pulmonary tuberculosis, I refer Dr. McDade to the penultimate sentence of my paper, in which I state that therapeutic abortion should be considered in certain cases of active disease.—I am, etc.,

R. C. COHEN,
E.C.C. Hospital, Black Notley. Deputy Medical Superintendent.

Cerebral Malaria

SIR,—In the article on cerebral malaria by Surg. Lieut. Sneddon (Dec. 25, p. 814) and in the letters by Major Cameron and Dr. Macleod (Jan. 22, p. 128) I am surprised no mention is made of mepacrine, and only in Dr. Macleod's letter of plasmoquin. I write from the same extensive experience in Assam as Major Cameron had in Malaya, and would commend to those who are meeting malaria without much knowledge of its treatment the article by the late Prof. Warrington Yorke in the *Journal* of July 18, 1942 (p. 61). Personally I would put in importance the treatment with mepacrine before that with quinine; I also use plasmoquin towards the end of treatment because of its value in preventing relapses.—I am, etc.,

Poole. W. B. MCQUEEN.

Treatment of Malaria

SIR,—The article on malaria in British troops in West Africa by Hughes and Bomford (*B.M.J.*, Jan. 15) must be of the greatest interest to all concerned in the treatment of malaria.

From experience in the Far East I found that many physicians did not fully appreciate the importance of keeping patients in hospital, or, in the case of private patients, under conditions approximating hospitalization in their own homes, for a minimum of 14 days. This period was adhered to by me in European, Eurasian, and Chinese patients.

Some Far East colleagues will no doubt remember the severe clinical types of subtertian malaria very prevalent in such areas of Hong Kong Island as Deep Water Bay and Repulse Bay, and in certain areas of the new territories of the mainland. The majority of such, especially in Europeans and Eurasians, were of a pernicious type and in the category of medical emergencies.

As a special investigation up to March, 1939, extensive use was made of atebrin (mepacrine) to the complete exclusion of quinine. Atebrin by the intramuscular route was the method of choice adopted in all pernicious attacks where vomiting was an invariable complication (0.3 g. intramuscularly at once, and repeated in 6 hours' time); a similar dosage during the following 24 hours, if necessary. Improvement soon occurred, and atebrin 0.1 g. t.i.d. was continued by mouth for a further period of 3 days. In two or three instances a total of 0.9 g. was given in 24 hours without any untoward effect. A very large number of cases were treated. The atebrin was then

supplied gratuitously by Bayer. In the article by Hughes and Bomford no reference is made to the use of mepacrine by the intramuscular route.

The alarming complications as quoted by various authors—*vide* R. Briercliffe, "Malaria in Ceylon," *Lancet*, 1935, **2**, 1078—were not encountered in any of the nationalities treated.

A clinical report to the Experimental Unit at Elberfeld (Kikuth) on the extensive use of atebrin in malaria has no doubt been destroyed in the ruins of that area.—I am, etc.,

WILLIAM I. GERRARD
(Formerly of Hong Kong University).
Kingseat, Aberdeen.

Shock Therapy

SIR,—I have read with interest Dr. Winnicott's letter attacking electric convulsive therapy on "ethical" grounds. Some of the replies emphasize the danger of further subdividing psychiatry by useless controversies. May I be permitted to add a note on this subject based on impartial observation of various forms of treatment in a large neurological out-patient department?

I have been privileged in the course of my work to meet leading exponents of several schools of psychotherapy, including psycho-analysts trained in Vienna, and to see some of the excellent results they all obtain even under wartime conditions. None of them, so far as I know, holds the view expressed by Dr. Winnicott. So Dr. Winnicott is to be congratulated on expressing himself so candidly and clearly in order that others who think as he does—even if only in some degree—may be encouraged to voice their opinions and so ventilate a natural and widespread feeling of revulsion from electric convulsive therapy. This is specially prevalent among those who know it mainly by name (horrible enough), and have no practical acquaintance with its results. Others have seen it used in the wrong cases, or, again, have heard of histological findings in rabbits subjected to formidable test doses.

Since the advent at the West End Hospital for Nervous Diseases of an out-patient unit for electric convulsive therapy, under the direction of a psychiatrist of considerable experience in treatments of this type, there has emerged in our hospital a new field of success. In my personal experience depressed patients, formerly inaccessible to other forms of treatment, even if suitable for out-patient treatment at all, and not infrequently refusing the only safe recommendation (treatment in a mental hospital), dragged on or curtailed their miserable existence without hope of succour. What use was it to assure them that they would *probably* recover if only they could put up with it a few months longer? 5,000 people in this country commit suicide annually, a perhaps not inconsiderable proportion of these suffering from depressive illnesses. Can it be "unethical" to save a few of these lives?

Of the first 50 cases treated at this hospital, all without complications, 34% returned to normal on an average of four weekly treatments, and a further 36% greatly improved. In every case care was taken not to pursue the treatment if there were not early signs of improvement. It need hardly be emphasized that, as in other branches of medicine, proper selection of the cases combined with care and skill in administration is essential for the best results.—I am, etc.,

A. GREY CLARKE,
Medical Registrar, West End Hospital for Nervous Diseases.

Obstetric "Shock"

SIR,—Drs. Mills, Kidd, and Dowsett (Jan. 22, p. 129) are reviving the doubts expressed by the French obstetrician Marc Rivière, who gave the title "Existe-t-il un Choc Obstétrical?" to a paper published in *Rev. franç. Gynéc. Obstét.* in 1924. Having gone over the records of 24,800 births which had taken place at the Vienna University Clinic between 1921 and 1930, I took pains in a monograph on obstetric shock ("Geburtsschock," *Wien. klin. Wschr.*, 1930, 1562) to differentiate between shock-like conditions occurring shortly after delivery and "true obstetric shock." Shock-like conditions after delivery may be due to haemorrhage, embolism, eclamptic toxaemia, and obstetrical manipulations such as version, Credé's expression or manual removal of the placenta, reduction of inversion of the uterus, etc. True obstetric shock was described as a variety of surgical shock occurring from one to three hours after delivery, and closely resembling secondary or wound shock in its symptoms and signs. It is only diagnosed after careful exclusion of the conditions mentioned, and is probably due to absorption of toxic substances (? histamine) from the placental site, producing changes in the distribution of circulating blood. It occurred once in just over 4,000 deliveries.

Drs. Mills, Kidd, and Dowsett are doubtless right in regarding a great proportion of shock-like conditions occurring after delivery as due to haemorrhage. Apart from these cases, however, every experienced obstetrician occasionally sees patients in whom the shock is quite out of proportion to the (personally observed) amount of blood loss. The fact that these cases of true obstetric shock respond to blood transfusion (or infusion of a 10% glucose solution) does not prove that their condition is caused by blood loss, for surgical shock, of which obstetric shock is but a variety, may occur with a very slight loss of blood and still respond well to blood transfusion.—I am, etc.,

NICHOLAS ALDERS.
Bedford.

Mastoiditis in Infants

SIR,—In answer to Dr. R. Palmerston Rundle's letter (Jan. 15, p. 93) I would suggest that if he were to open the mastoids post mortem of babies under 1 year old who are supposed to have died from gastro-enteritis his opinion that mastoiditis is rare would be reversed. He states he has not seen a case of acute mastoiditis among the children he treats. In my paper I was careful to point out that the physical signs of acute mastoiditis as seen in elder children do not occur. In order to diagnose the condition before death the physical signs enumerated in my paper must be recognized. It is possible that Dr. Rundle has failed to diagnose a condition which nevertheless was present.—I am, etc.,

P. W. LEATHART.
Birkenhead.

Actinomycosis with Lung and Liver Involvement

SIR,—Mr. Hubert Chitty (Jan. 22, p. 115) cites a case of recovery from actinomycosis of the liver, and says that he can find no report of a similar recovery. Personally I had a case which might reasonably be classed as a similar one, although many phases occurred in the history, and it began primarily in the right lung, infecting the liver, and lastly the structures in the right iliac fossa.

The patient was a fruiterer who had his own horse and cart and had to groom the former after delivering his wares. He developed a right basal pneumonia which resolved so slowly and incompletely that he was sent to Manchester Royal Infirmary for *x*-ray examination. I have no records of the actual findings, but they were to the effect that resolution was incomplete and there was evidence of fibrosis wih bronchiectasis. A state of ill-health resulted for months, with partial incapacity and a lot of expectoration, which was not found to be caused by frank tuberculosis.

After some months of poor health the patient developed pain in the right hypochondrium—not severe but continuous, with slight increase of temperature. He was put to bed and expectant treatment resorted to. The pain, which had been high up in the abdomen, settled in the right iliac fossa, and there was marked tenderness over McBurney's point. He was forthwith sent to Manchester Royal Infirmary and operated on after a tentative diagnosis of subacute appendicitis. An abscess was opened, but it was impossible to remove the appendix, and the patient was eventually sent home with a small fistulous opening present.

The discharge dragged on, and eventually another collection of pus developed with brawny swelling above the original incision. He was again sent to hospital and again operated on. The whole of the contents of the caecal area were matted together with brawny, oedematous adhesions. On this occasion, however, the true nature of the complaint was recognized, sulphur-like granules being present in the evacuated pus. Eventually the patient was sent home, and large doses of pot. iod. recommended.

He was subsequently bed-ridden for over a year, numerous sinuses developing in the right groin, and even below Poupart's ligament. The right hip- and knee-joints were partially flexed for about two years in spite of massage and gentle manipulation, but as the numerous cloacae in the lower abdomen healed and the pus became less in quantity, the patient was able to get about with the aid of a stick, and the flexion gradually improved, until to-day there is little evidence even of a limp, and the aid of a stick is unnecessary.

So far as one can observe the condition is completely cured, and as I saw the man only a few days ago looking the picture of health

there is little doubt that the cure is complete, for it is now at least ten years since the initial onset of symptoms. The original infection was either a primary basal actinomycotic lung infection or else a subdiaphragmatic liver abscess, which in course of time tracked down the right psoas sheath and ended in the caecal area before it burst in the right groin.—I am, etc.,

Stockport. J. G. BENNETT, M.D.

Toxic Reactions to Sodium Dehydrocholate

SIR,—Sodium dehydrocholate as a 20% solution for intravenous injection has been extensively used for determination of circulation time. It is perhaps the most popular method of measurement. It is described as one of the standard methods by almost all writers on the subject, and has been sufficiently long in use to be a recommended method in such standard works as Fishberg's *Heart Failure* (1940), Paul White's *Heart Disease* (1937), and Samson Wright's *Applied Physiology* (1940). I have found no reference in these works to toxic reactions, nor was there any mention of it in Martindale's *Extra Pharmacopoeia* (1941). The technique has been used freely in this clinic during the last three or four years as a measure of arm-to-tongue circulation in congestive failure, when it has proved a useful indication of progress under treatment, and also in the diagnosis on supposed communication between the right and left sides of the heart. Recently, however, using the standard preparation supplied by a firm whose standards of purity are very high, reactions have been experienced in three patients, and in one of these subsequent death was probably to be ascribed to the reaction. The symptoms were as follows.

No immediate effect beyond that desired—i.e., experience by the patient of a bitter taste—was produced, and the patient complained of nothing for about an hour. There was then a slight rigor followed by headache, nausea, actual vomiting in one case, and a feeling of severe malaise. No alteration in heart rate or rhythm or fall in blood pressure was observed in the two non-fatal cases; in one of these the reaction was only distinctly unpleasant, in the other slightly alarming. In the third case, however, there appeared to be an immediate "collapse," and the nurse who witnessed it could temporarily not feel the radial pulse. By the time the house-physician made his observations (10 to 20 minutes later) the heart rate and rhythm seemed undisturbed and blood pressure was 150/90, having previously been recorded as 170/110. The patient was still distressed, however, with rather rapid respiration rate, and was spitting up a slightly frothy sputum, but not in any large quantities. The sputum was not blood-tinged. A few crepitations were heard at the bases, but these had been observed the day before when the patient had been admitted. An injection of nikethamide had been given at the onset of these symptoms, and oxygen. The patient was then left by the house-physician with no sense of great anxiety, but one hour later suffered again a sudden circulatory collapse and died in a few minutes. No consent for post-mortem could be obtained.

I am informed by the suppliers that occasional toxic reactions have been reported by other observers, and that some investigation is being made as to the cause, but that such reactions are "infinitely few in comparison with the number of ampoules used for estimation of the circulation time and other purposes." The proportion, however, which the reactions we have experienced here bear to the total number of times we have used sodium dehydrocholate, although small, is certainly not infinitely small. Despite the usefulness of the test, it seems inadvisable to use it so long as the possibility of such serious reactions exists. There are other methods which, although perhaps not quite so satisfactory for bedside use, can nevertheless take its place.—I am, etc.,

Inverness. D. G. LEYS.

The Septic Finger

SIR,—If I may be allowed a little of the valuable space in your correspondence column I would like to support Drs. Thomas, Mistlin, and Boroda (Jan. 15, p. 98) in their reply to Dr. Bailey's letter (Dec. 11, p. 764), in which he says that he saw only one "over-ripe" septic finger and no cases of necrosis of a terminal phalanx. He was extraordinarily lucky! Dr. Romer was not wrong in stating in his letter (Oct. 30, p. 556) in reply to Dr. Atkinson's (Oct. 2, p. 432) that "the worst mistakes are *not* made by 'the most junior house-surgeons,'" as the latter seems to believe. True, as he (Dr. Atkinson) says, "there is much unskilful and even negligent treatment of septic fingers," but as to who is responsible for this I am in 100% agreement with all that Dr. Romer says in his excellent letter.

But since none of these writers has produced any actual figures, I have tabulated the more relevant facts from the first 70 consecutive record cards of the first 70 patients with infections of the hand that I saw and treated myself.

Type of Infection	Number and Percentage	Days Lost by All	Number "Over-ripe"	Average No. of Days for "Over-ripe"	Average No. of Days for Others	Average Difference
Superficial abscess	19 (27·14)	196	6	13·8	6·3	4·5
Paronychia ..	16 (62·85)	187	3	24·66	7·5	17·16
Pulp	14 (20)	154	2	26·0	8·5	17·5
Tendon sheath ..	7 (10)	164	2	45·0	14·8	30·2
Lumbrical canal	3 (4·28)	74	2	43·0	15·5	27·5
Septic arthritis ..	1 (1·42)	48	1	48·0	—	?
Miscellaneous ..	10 (14·28)	184	3	28·6	14·0	14·6

This table shows that in 70 infections of the hand 1,007 man-days' work were lost, in my opinion at least 326 (approximately) being avoidable if the patients had been treated earlier with adequate drainage. Not only was there this loss of labour for war production, but in three of the cases which were "over-ripe" (19 in all—i.e., 27%) there was necrosis in a terminal phalanx, as shown by *x*-ray examination, while most of the remaining 16 have some permanent stiffness and loss of function. Eight of these unfortunate ones had had their fingers "lanced" by their doctors from 2 to 5 days before being sent up to hospital. Each had had a "freezing spray." Surely the ethyl chloride spray can have no place in the treatment of these infections, since they are either (1) so superficial that the dead skin can be snipped off quite painlessly without any anaesthetic, or (2) so deeply seated that this method of anaesthesia cannot enable adequate incisions to be made.

Finally, I would like to reiterate Dr. Romer's observation that "no doctor should go into general practice without having done a casualty job." Being only four weeks away from the end of my appointment as a casualty officer, I am quite convinced that for good all-round experience it is the best possible way of spending the six months before joining one of the Services.—I am, etc.,

London, N.15. PHILIP HOPKINS.

Psychiatry at the Cross-roads

SIR,—In view of the growing importance of psychiatry in all branches of medicine the profession should be grateful to Drs. Sargant and Horsley for drawing attention to some of the more unsatisfactory features of mental hospital administration. They mention particularly one question—namely, the inferior status of the "assistant medical officer." The name sums up the position. No official recognition is accorded him of his specialist qualifications. He is an A.M.O., not a psychiatrist. All progressive members of the profession now advocate that in all hospitals, including mental hospitals, the clinical worker should have a status at least equal to the administrator's (both doctors and nurses), and that the clinical affairs of the hospital should be run by a clinical committee.

Time was when in his custodial role the medical superintendent could effectively carry out the duties implied in both parts of his title. There is still a legal fiction that this is so even now. Such is clearly far from being the case, and it is absurd to suggest that any one man can in fact be fully *au fait* with all that is happening in a community which, including patients and staff, may total nearly 4,000 persons in some modern mental hospitals.

We must never lose sight of the old truism that as doctors our first duty is to our patients. Unfortunately it is very easy to do so, as a remark in Dr. Cuthbert's letter illustrates. As a solution of the present difficulties he suggests that the A.M.O. should resign or seek appointment elsewhere in a more progressive district if he meets with opposition. But what of the

unfortunate patient who is not at liberty to resign or seek appointment elsewhere?

The second main factor in the production of those undesirable internal stresses among the medical staffs of mental hospitals to which your correspondents refer is the isolation of these hospitals. The mental hospital is a self-contained world effectively insulated against the real world outside. This barrier must be broken down if psychiatry is to play its proper part in general medicine, education, and industry. All local mental services must be integrated into a national scheme with interchangeability of staffs. The mental service must function as a unit of a general health service on a national scale. Psychiatrists should work in health centres, general hospitals, schools, and factories, as well as in the mental hospital. The mental deficiency and general psychiatry personnel should no longer be rigidly separated, and the prison service should be linked up with the general scheme. Above all, in research, greater efforts must be made to enlist the general research worker with all his technical facilities in the attack on the host of formidable problems with which psychiatry bristles.

The difficulties of Drs. Sargant and Horsley will be solved when, by the breaking down of these barriers, we are enabled to take psychiatry to the patient instead of taking the incurable psychotic to the "A.M.O."—I am, etc.,

St. Mary Cray. BRIAN H. KIRMAN.

Intravenous Anaesthesia

SIR,—I have read with interest the article by Drs. F. W. Roberts and B. A. Sellick describing a simple method of intravenous anaesthesia (Dec. 25, p. 813). My interest in anaesthetics is purely from the surgeon's view-point. As the anaesthetics in this hospital are given by house-surgeons, many of whom have no previous experience, it is a matter of necessity for me to interest myself in this branch of medicine and to try to teach it as well as to perform operations (a task I do not approve of). I have been using intravenous anaesthesia since 1936, and I have now given, or rather have been responsible for having given, about 3,000 intravenous anaesthetics without any mortality or even any serious worry about any case.

I do not agree that the apparatus described by your correspondents is so very simple. In the first place it requires the use of a table, which if large probably comes in the way of the surgeon or his assistants, and if small must be of a very sturdy pattern to ensure that it is not knocked over accidentally. The provision of a hand bulb requires fairly frequent attention if one is to ensure that blood does not leak back from the vein and block the needle during the intervals between injection of the anaesthetic solution. I do not see anything cumbersome in a simple metal stand which provides a continuous gravity drip with such an apparatus as a collosol saline bottle with the usual attachment for intravenous drip. With this apparatus the anaesthetist can devote more of his attention to the patient, and the continuous drip eliminates all possibility of blood blocking the intravenous needle. Another point I would like to stress is the necessity for putting three strips of adhesive plaster on the patient's forearm: one across the tube immediately behind the adapter, a second about 3 in. further back, and a third about 1 or 2 in. further on. A thin pad of ribbon gauze under the outer end of the needle and the adapter will be useful in most patients, especially thinner subjects. I do not use pressure tubing as described by your correspondents in para. 6: about 4 in. of ordinary good tubing is quite good enough, and has the advantage that it permits the easy insertion of the needle injecting the anaesthetic agent. It is also easy for the anaesthetist to compress this tubing on the distal side while injections are being given. For operations in the upper part of the body the vertical stand has the further advantage that it can be moved rapidly out of the way. I have never seen a needle slip out of the vein after the adhesive strips are applied properly to the tube and the patient's arm, and the collosol drip-saline apparatus is the essence of simplicity.

Intravenous anaesthesia does not appear to be very popular in this country, judging from the number of house-surgeons who come here and who have never seen it given. So far as I can estimate this is due to failure to apply a proper technique, and especially pre-operative medication. For short operations of ten to twenty minutes' duration I do not think it has an equal. It has the great advantage of putting the patient asleep in one minute without any unpleasant feeling whatever on his or her part, and it provides muscular relaxation not usually possible with gas.

The highest dosage I have used has been 34 c.cm. of 5% pentothal. All patients receive a preliminary dose of morphine varying from 1/6 to 1/2 gr., with atropine, according to the stature of the patient. Patients who do not appear to be recovering fairly quickly receive a dose of intravenous coramine, which has proved a rapid restorative. The only unpleasant seqqel is vomiting, which occurs in about one-fifth of the patients. The vomiting is not of a very serious character and in my opinion is very frequently due to morphine, as about 10% of all patients have a tendency to vomit before they receive any pentothal.

Finally, I am sure (as this important subject has been very seldom dealt with in the *Journal*) many of us would be glad to have some further information from expert anaesthetists such as Drs. Roberts and Sellick on the maximum dosage they employ in the administration of intravenous anaesthesia.—I am, etc.,

J. F. O'CONNOR,
Surgeon, Limerick County Hospital.

Population Problems of India

SIR,—Prof. Blacklock has raised a very important topic in his article in arguing it will be necessary to give attention to the population problems of India. However, his essay is based on an uncompromising acceptance of the validity of the Malthusian doctrine, backed only by the rather hypothetical support of Henry George. But neither of these is to-day usually regarded as the greatest of economists or even of experts on population problems. On the contrary, Malthus, whom facts have nowhere proved correct, is regarded as a subject of purely historical interest.

As regards Western Europe there is no doubt of the falsity of his theories. In India, too, he has been disproved: Prof. Blacklock quotes the increase of the population 1931–41 as being 15%. Prof. R. R. Kuczynski, "the most distinguished living authority on problems of population," has thrown considerable doubt on the accuracy of the Indian census figures in the *Statist*, Dec., 1937; but even if the figures are accepted, while India's population 1921–31 increased by 10.6% the U.S.A. increased by 14.2%. From 1880 to 1930 India's numbers rose by 31.7%, while England and Wales bore 53.8% more. Moreover, Indian food production increased by more than the population (R. Mukerjee, *Food Planning for Four Hundred Millions*, 1938, pp. 17 and 27). Prof. P. J. Thomas in the *Times* of Oct. 24, 1935, summed it up: "Population has not outstripped production. . . . Those who are alarmed about 'the devastating torrent of babies' in India will do well to direct their attention to improvements in the distribution of the national income, in the quality of consumption, and in the geographical distribution of population, and to other allied matters."

I would submit that there are many points of the greatest significance which are overlooked in Prof. Blacklock's thesis, and I beg to draw attention to some of them.

1. He omits all consideration of the possible effects of industrialization in India. While it might be correct in global estimations to concentrate all attention on agricultural products as the basis of human life, it is certainly wrong to do so in considering one country, even though it be as vast as India. Particularly is this a potentially great source of error in India, since she is richly endowed with many of the raw materials of industry, the development of which cannot be long delayed. Furthermore, as the Hot Springs Conference Report, Section II, states, "The real clue to the solution of the problems of agricultural over-population lies in industrialization . . . [it] is also necessary if we are to raise the general standard of living."

2. New scientific agricultural techniques have demonstrated the enormous potentialities of increased production—the vernalization of grains enabling otherwise climatically unsuitable areas to produce food grains, artificial insemination with its

prospects of improved stock breeding, heating of soils by electric wiring—all these are the very first-fruits of the application of science to agriculture, and give promise of new and limitless production possibilities.

3. There is an observed tendency for urban populations to be less fertile than rural populations, so that as the industrialization which it is suggested in 1 may take place, it might be accompanied by a reduction in the birth rate.

4. Man is both consumer and producer. To-day in India 50% of all deaths are of children under 10. From another standpoint this means that a great proportion of the population never functions as fully efficient producers. Every lengthening of the span of life, if it is coupled with adequate nutritional intake, increases the producer period of a man's life.

5. As emphasized at the Hot Springs Conference, only a satisfactory diet will enable a man to function as an efficient producer, and, to quote once more from the admirable section reports of that conference: "Given the will, we have the power to build in every nation a people more fit, more vigorous, more competent; a people with longer, more productive lives, and with more physical and mental stamina than the world has ever known." It is on this goal of expansion, rather than on any restriction, whether of production or of population, that I suggest we should fix our gaze.—I am, etc.,

R. G. FORRESTER,
Chairman, Research Committee, Association of Scientific Workers.

Allowances for Tuberculous Persons

SIR,—There has been some criticism of the scheme for tuberculosis allowances, the guiding principles of which were adumbrated in Ministry of Health Memorandum 266 T, a document that may yet prove to be the foundation of a "charter" for the tuberculous. Everywhere—from the House of Commons to the dispensary waiting-room—one learns of the shortcomings of a scheme which the Government is among the first to own is not comprehensive. Two main barrages of criticism have been laid down: (1) that the scheme excludes the "chronic" case; (2) that non-pulmonary cases are ignored.

Adult pulmonary tuberculosis is, in the main, a chronic, fluctuating disease. The most acute types may be fatal within weeks or months. Is it not therefore wrong, for the purposes of the treatment allowance, to make a distinction between "chronic" and "acute"? In the most severe types (than which no type is less "chronic") no tuberculosis officer would recommend payment of allowances. The criterion for participation is surely whether an individual, by undertaking treatment, has a reasonable prospect of being restored to working capacity within 1 to 2 years. Where the prognosis is less favourable many think that such patients should also receive benefit. This raises the larger issue of whether our chronic sick population in the future should be entitled to pensions from the State. It would be untimely and inequitable to grant pensions to our chronic phthisical population while leaving out our chronic bronchitics, cardiacs, arthritics, etc. It cannot be said that the mere provision of allowances to those suffering from chronic phthisis would alter by one jot their potential infectivity to others.

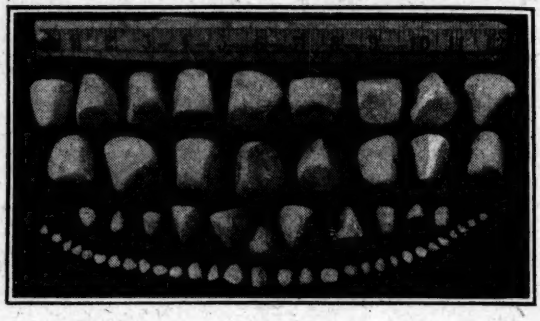
Non-pulmonary cases are generally not a danger to public health, and bone and joint tuberculosis requires prolonged institutional treatment. For these and other reasons I do not think that they should be included in the present scheme. If they were, such diverse conditions as Pott's disease, renal and abdominal tuberculosis, lupus, iridocyclitis, would all carry some entitlement to benefit. Has the tuberculous synovium to be favoured while the "rheumatoid" one is not? Should we aid our tabes mesenterica and not our abdominal Hodgkin? There is no halo round the tubercle bacillus that it should be expected to receive such priority.

Mem. 266 T, essentially a wartime measure, is a beginning that is welcomed by all tuberculosis workers. Few are they who, if given a free hand, could not improve the scheme. No Government in the future can turn back on a road already travelled upon up to (and beyond) the first milestone. We can therefore expect with confidence that Mem. 266 T is the first instalment of a programme in which it will be recognized that our "chronic sick" population, including the chronic tuberculous, is the responsibility of the community.—I am, etc.,

Hull. R. HARDY.

58 Stones in the Urinary Bladder

SIR,—In December last there was admitted to the Waveney Hospital, Ballymena, a man aged 67 who complained of pain and frequency of micturition with the frequent passing of what he called small flints. Of these he stated he had passed three on the day before admission. His trouble dated back for almost twenty years. On abdominal palpation a hard tumour the size of a foetal head could be felt rising out of his pelvis. *X*-ray examination showed an opaque mass of that size apparently faintly divided into separate masses about the size of bantams' eggs. On Dec. 29 I removed from his bladder, through a suprapubic approach, 58 stones weighing altogether



20¼ oz. The largest was well over 1½ oz. in weight and there were 11 which weighed over 1 oz. each. I enclose a photograph of the stones, which shows their shape and size when compared with an inch tape measure included in the photograph.

This is a record number of bladder stones so far as I am concerned, and I have been wondering if it approaches a real record. The patient is doing well, and when after seeing the stones he had expressed his astonishment at their number he made one request. He stated that his family had thought that he had been exaggerating his sufferings before he was sent into hospital, so he specially asked that the stones should be shown to his wife, stating that surely after seeing them she would show a little more "generosity" towards him. I presented him with a copy of the photograph, which he shows to people presumably to stimulate their "generosity."—I am, etc.,

Ballymena, Co. Antrim. J. ARMSTRONG.

Artificial Vagina

SIR,—I have read the article by Mr. Thomas O'Neill on congenital absence of the vagina treated successfully by the Baldwin technique (Dec. 11, p. 746) with great interest. However, I have missed one publication among the references. It concerns an operation for atresia vaginae performed, and published in the *Arch. Gynäk.* in 1923, by G. A. Wagner, working in Prague at that time.

The case concerned a woman of 27 with atresia vaginae operated on at the age of 19 for haematocolpos and haematometra. On examination there was found a vagina which was divided into two parts by a transverse scar. The lower part was about 3/4 in. long admitting the tip of the finger, the upper part was about 2 in. long and connected with the lower part by an opening just admitting a probe. The uterus was of normal size. After excision of the scar a piece of rectum was used to form an artificial vagina following Schubert's technique.

After the operation the patient menstruated regularly until the spring of 1922, when she became pregnant. Arrangements were made to perform a Caesarean section at term in order that the artificial vagina should not be damaged. As the patient lived in the country and the labour pain started a short time before the estimated date she was unable to get to hospital for the operation. However, a living child of 6 lb. was born with the aid of forceps and episiotomy. Apart from this episiotomy the artificial vagina was undamaged. The woman delivered another living child by natural means, but unfortunately I could not find the references for the second pregnancy.—I am, etc.,

London, N.W.1. V. GOLD, M.D.Prague.

Babies in Hospital

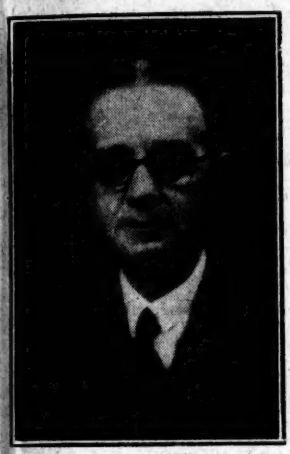
SIR,—I am in entire agreement with Dr. Margaret Dunstan in her opinion that "hospital wards can be very dangerous places in which to treat infants" (Jan. 22, p. 131). Out of a series of 190 cases of infantile diarrhoea treated at the West Middlesex Hospital between April, 1942, and April, 1943, 84 were transferred direct or recently discharged from institutions—maternity wards, children's wards, and wartime day nurseries. The total mortality was over 50%.—I am, etc.,

PATRIA GAIRDNER, M.D., M.R.C.P.,
Asst. M.O., Oxfordshire County Council.

Obituary

W. W. C. TOPLEY, M.D., F.R.C.P., F.R.S.

We much regret to record the sudden death on Jan. 21, at the age of 57, of Dr. W. W. C. Topley, a brilliant bacteriologist, a great administrator, and for more than twenty years an outstanding figure in English medicine. His career as a student was marked by conspicuous success. At Cambridge he was a scholar of St. John's College and was placed in the first class of the Natural Sciences Tripos. He qualified in 1909. While at St. Thomas's Hospital he won the Murchison Scholarship of the Royal College of Physicians, and, influenced perhaps by the vigorous personality of L. S. Dudgeon, as were others of his generation, he began his life's work as assistant director of the hospital laboratories. A year later he became director of the department of clinical pathology and lecturer on bacteriology at Charing Cross Hospital, and from that time onwards became more and more engrossed in bacteriology. As a captain in the R.A.M.C. he was appointed bacteriologist to the British Sanitary Commission in Serbia, and in 1919, on his election to the Fellowship of the Royal College of Physicians, was invited to deliver the Goulstonian lecture, an unusual honour for a laboratory worker.



[*Elliott and Fry*

In 1922 Topley's reputation as a bacteriologist and as a teacher was recognized by his election at an early age to the chair of bacteriology in the University of Manchester, where during the following five years his vigorous capacity for constructive administration found congenial and profitable opportunity. He planned and brought into existence an admirable course designed to give young graduates a sound training in the principles and practice of bacteriology, and it provided the model for the courses for the academic diploma in bacteriology of the University of London. In 1926 he delivered the Milroy lecture, and his election in 1927 to a professorship in the University of London and the directorship of the Division of Bacteriology and Immunology in the newly established London School of Hygiene and Tropical Medicine came as a fitting and very popular recognition of the position which he had made for himself among English-speaking bacteriologists. The appointment at the School of Hygiene provided Topley with a larger field for his gifts as a teacher and as an administrator, and enlarged opportunities for collaboration in research with his colleagues and pupils as well as with friends in other London laboratories.

In his original work he devoted himself to the investigation of the factors which influence the spread of bacterial infection, and he invented and used entirely new methods for the study of epidemics in a population of laboratory mice. He was one of the first to use experimental methods in the study of epidemics, and he became the authority on the subject. During the twenty years 1919–39 Topley in association with colleagues and pupils carried out a number of ingeniously planned experiments which required skill and patience in their performance and judgment in their interpretation. He made new observations and was able by the use of controlled experimental material to amplify and check conclusions derived from the observation of naturally occurring epidemics in man. His contributions to bacteriology derived their inspiration from the study of the problems which presented themselves to him in the course of his epidemiological inquiries. In 1921 he described an ingenious method of obtaining cultures from single bacterial cells, and in the same year published a paper on the interrelationship of members of the Salmonella group of bacteria. He contributed several papers on the complex problems arising from the antigenic analysis of the types responsible for enteric infections, and on the susceptibility of these micro-organisms to bacteriophage. The studies of experimental epidemics provided an opportunity for the investigation of the influence of prophylactic inoculation under controlled conditions, and of the effect of change of diet on a population of mice exposed to infective disease. Of particular interest is his more recent work undertaken in association with H. Raistrick and M. E. Delafield on the immunizing potency of antigenic components isolated in a state of relative chemical purity from *B. typhi murium* and from *B. typhosum*. In a short paper published with J. Wilson and J. T. Duncan it was shown that, in a mixture containing two distinct types of bacteria and their two homologous antisera, the resulting aggregates were of two distinct types, each containing individuals of one or the other species. Mixed aggregates did not occur.

Topley wrote well, and *An Outline of Immunity*, published in 1933, contained within 400 pages an informative review of the then state of knowledge in this subject. To-day it is still good reading. *The Principles of Bacteriology and Immunity*, which he wrote with G. S. Wilson, became on the day of its publication the standard work of reference in the English language, an indispensable source of accurate and up-to-date information. Topley's communications to the Pathological Society will be remembered by its members as examples of exposition, short and to the point, and often flavoured with a restrained and half-concealed humour.

Early in 1939, at the request of the Medical Research Council, Topley undertook the preparation of plans for the mobilization of bacteriological experience to meet the probable needs of impending war. He had a gift for making plans, and the rarer gift of making plans which worked and of choosing the right men to carry them out. The Emergency Health Laboratory Service, a fitting memorial to his bold but always constructive planning, should survive the period of the war to the great advantage of the medical services of the country. His election to be Secretary of the Agricultural Research Council—a remarkable tribute to his administrative genius—came as a shock to his medical colleagues, to whom his help and co-operation, always freely given, had come to mean so much. In 1942 he was awarded a Royal Medal of the Royal Society for his outstanding work on experimental epidemiology and immunology.

Staunch and loyal to his friends, in whose problems and difficulties he took an interest which was sometimes critical but always helpful, he disliked humbug, especially in high places, and was always ready to give encouragement and help to younger men who came to him for advice. We who have known him and enjoyed his companionship must mourn a much-loved friend, and medical science can ill afford his loss.

We are indebted to Prof. MAJOR GREENWOOD for the following appreciation: A friendship of more than twenty years and close scientific collaboration down to the outbreak of war united me to Topley. Of the merits of our work on experimental epidemiology it is not for me to speak, but a few words on the nature of the collaboration may be said. The whole credit of initiation belongs to Topley and all the improvements of experimental technique were his. The part of the statistical collaborators was mainly critical and technical; when, as sometimes happened, one of us suggested a new experiment, it was Topley who converted a project into a real experiment. His skill in devising a set-up was great; but others can speak of his scientific genius with more knowledge than I; it is of him as a human personality that I wish to say something. Bagehot said of Macaulay that he never changed, that what he was at 30 he still was at 50. Bagehot intended this to be disparaging—he spoke of Macaulay's inexperiencing nature; the sense in which I apply it to Topley is not disparaging but, I think, the key to his success. He never lost the eagerness which he showed as a young man.

When Topley began his work on experimental epidemiology in 1919 he was under 35; his wartime experience of a great epidemic and the vagueness of "classical" epidemiology—a mixture of

archaeology and folk-lore, he once called it—stimulated him to try experimentation. Perhaps he may have expected quicker results from experiment combined with the new biostatistical technique of Pearson and his pupils than an older man would have done. If so, he quickly readjusted himself, and realized that the research would be long and could not be spectacular; that at first one could only verify natural experience; then, as the technique became more precise, make small additions to knowledge; never, within the span of a lifetime, solve completely the great problems. But his enthusiasm never flagged. He could bear cruel disappointments—the ruin of a long experiment by an accidentally introduced infection, or, still more exasperating, the demolition of an apparently established hypothesis by a "natural" variation—with perfect good humour. That is why he has left a technique which others whom the gods do not love can use. The hardest part of the research is over; now duller people can raise the flower for they have got the seed.

It may be said that Topley's enthusiasm was confined to a relatively narrow range of subjects, that his scientific philosophy was Victorian. Perhaps that is true; he read widely, but never, I think, had much emotional sympathy with methods of seeking truth which did not depend on controlled laboratory or field experiments. However, in these days of slovenly omniscience one may well respect a man who resolutely ignores what does not interest him, who never pretends to know what he does not know. We have lost a man whose intellectual honesty was unshakable, who always expressed his opinions clearly.

> ". . . Let me not live . . .
> After my flame lacks oil, to be the snuff
> Of younger spirits,"

is a prayer Topley would have put up; he has gone before the meanest spirit could hint at a lack of oil, and science will be the poorer. His friends will cherish more personal memories—his keen enjoyment of the sea and the open country; the solemnity with which he denounced idols of the market place; the twinkle in his eye when one asked: "A *bad* man, Bill?"; and he would reply: "A *very* bad man." It was quite possible to disagree with Topley, *very* difficult not to love him.

H. M. CLARKE, M.B., B.CH.

We regret to announce the death on Jan. 11 in a nursing home at Reading of Mr. H. M. Clarke. Born in 1878, Henry Milford Clarke received his early education at Wakefield Grammar School, from which he entered Clare College, Cambridge, with a classical scholarship in 1897. He graduated B.A. in the Natural Sciences Tripos in 1900, B.Ch. in 1905, and M.B. in 1906. From Cambridge he went to Guy's Hospital, where he was house-surgeon to Sir William Arbuthnot Lane and to Mr. Frank Stewart and was out-patient officer. In 1907 he went to Reading, where he soon entered upon his long association with the Royal Berkshire Hospital, which continued until ill-health compelled him to retire from practice a few years ago. He held the posts of surgical registrar, surgeon to out-patients, and finally surgeon. Clarke was incapacitated by illness some little time before the age (60) for retiring from the honorary surgical staff; when he reached that age he was elected an honorary consulting surgeon to the hospital. He was an active member of the Reading Pathological Society, which he joined in 1908 and of which he was president in 1933–4. During the last war he held several surgical appointments in succession, serving from October, 1914, to May, 1919. He was seconded to the French Army base hospital at Rennes; surgeon to the *Aquitania* until the evacuation of the Dardanelles; surgeon at a casualty clearing station in France, where he was severely wounded in 1917; and surgeon specialist in Malta.

In his younger days Clarke was keenly interested in rugby football and rowing. He rowed in his college boat in the May races, the crew achieving the coveted four "bumps," and for the Reading Rowing Club. He also played for the Berkshire Wanderers (Rugby) Football Club. Clarke was a very modest man; and only those intimately associated with him in surgical practice could realize fully his surgical skill and his devotion to surgery. His long service to the Royal Berkshire Hospital was rendered in the quiet, unobtrusive manner characteristic of him. In sport he played with the true team spirit, shunning all personal notoriety. He was a deservedly popular man, and his passing is mourned by a wide circle of friends and patients. He leaves a widow, to whom deep sympathy is extended by all who knew them and enjoyed their friendship.

Mr. W. BERNARD SECRETAN, consulting surgeon to the Royal Berkshire Hospital, writes:

Clarke was a man of extremely modest character, good-natured to a degree and with a charming manner. I should think he never had a quarrel. He was a man of parts, but owing to his unassuming character this was not sufficiently appreciated. He had an excellent knowledge of several languages and was accustomed in his vacations to visit Continental clinics to improve his medical outlook. He was a Fellow of the Zoological Society and was intensely interested in all animal life, and particularly in bird life; he had a very fine collection of shells, on which he was quite an authority. He was an extremely good surgeon, both as diagnostician and operator; he would, I think, have become even better known in this direction had he been less inclined to self-depreciation. He was unfortunately cut down in his prime by an illness which left him incapable of work for a good many years before his death. Everyone at the Royal Berkshire Hospital will remember him with affection.

We regret to announce the death of Dr. JEAN MARR on Jan. 2. Jamesina Jane Marr was born in Banffshire, Scotland, on Jan. 19, 1875, and qualified M.B., Ch.B. at Edinburgh in 1907 and took the D.P.H. at the same medical school in 1909. She held resident posts at the Edinburgh Hospital for Women and Children and the Aberdeen Sick Children's Hospital and was for a time assistant school medical officer at Aberdeen. For over 30 years Dr. Marr was in practice in Glossop Road, Sheffield, until compelled by failing health to give it up in 1937. She was a member of the B.M.A. until her retirement as well as of the Medical Women's Federation and the North of England Obstetrical Society. Her practice was largely devoted to the treatment of women and children, and she became locally well known as an obstetrician. She was a dearly loved practitioner who, it can be said, devoted her life to her profession. She was, in short, the real family doctor whose advice was sought on many problems not necessarily medical. She was extremely generous to the less-well-off, and she will be affectionately remembered by a large number of women who received treatment from her but never an account.

Medico-Legal

WHAT IS A SHOP?

A salesman came twice a week to the same pitch in the uncovered part of the Leeds City Market and set up a stall, consisting simply of a board supported by two trestles. One day he sold to an inspector of the Pharmaceutical Society some medicine of a kind which under the Pharmacy and Medicines Act, 1941, s. 12 (2), may not be sold by retail except at a shop. Prosecuted before the stipendiary, he argued in his defence that his stall was a shop. The magistrate held that he was wrong and convicted him, but agreed to state a case for the Divisional Court. The Act refers for the definition of a shop to the Shops Act, 1912, which says that a shop includes any premises where any retail trade or business is carried on. The salesman seemed therefore to have a fairly strong case. The Lord Chief Justice, however, insisted on considering the definition in relation to the objects of the Pharmacy and Medicines Act and its other provisions. The Act seemed to him clearly to provide machinery by which the status of the profession or trade would be raised or maintained. In many passages Parliament seemed to have contemplated that the "shop" dealt with in the Act should be a place defined by precise limits upon which or upon part of which there was some sort of a structure. He thought it necessary to consider, not only whether a retail trade was carried on, but whether there were any "premises" where it was carried on. He did not find any particular help in the authorities. He agreed with an earlier dictum that the Legislature meant to give (in the Shops Act) an extended and unnatural meaning to the word "shop," a meaning that went far beyond the popular and recognized meaning. Nevertheless, he did not find that the words "premises where a retail trade is carried on" were so wide as to mean that a place unbounded by any ascertainable marks or fences, with no structure except two trestles and a board, with no continuity or regularity except business twice a week, was a shop. The court therefore held that the salesman had been rightly convicted of infringing the Pharmacy Act. The decision will probably put a stop to a good deal of informal trading in medicines which the Act was designed to check, but it suggests the interesting question: If a pharmacist's shop is destroyed by a bomb, is it unlawful for him to carry on his business on the cleared site, or in front of it, on an improvised counter? If it is, he is at a disadvantage from which other retailers do not suffer.

Medical Notes in Parliament

Employment of Disabled Persons

The House of Commons, in Committee on Jan. 18, began consideration of the Disabled Persons (Employment) Bill. Mr. RHYS DAVIES moved an amendment to include in the definition of disabled persons those suffering from neurosis. He said that cases of neurosis were among the most difficult to deal with in rehabilitation, and he was not sure that, as the Bill stood, the Ministry of Labour could deal with them. The last report of the Ministry of Pensions showed that the largest single group of disabled persons still remaining on their books was that of sufferers from neurosis. Mr. TOMLINSON said there was no doubt that the definition in the Bill covered both physical and mental disease, and Mr. Davies was wrong in saying that mental deficiency would not come under the Bill. Several members having supported the amendment, the ATTORNEY-GENERAL said it was the intention to include people whose mental infirmity arose from mental disease, as well as those whose mental infirmity arose not from disease but from a congenital condition. The amendment was withdrawn. Mr. TOMLINSON then moved a Government amendment, defining "disease" as including a physical or mental condition arising from imperfect development of any organ. The purpose of the amendment was to prevent anybody being excluded. For instance, the imperfect development of the optic nerve might cause blindness, and where the disability was congenital it would be included under his amendment. It was intended to embrace every reasonable case. The amendment was agreed to.

A long discussion took place on an amendment moved by Major MANNINGHAM-BULLER, which, he said, would ensure that if there was to be a "queue" for admission to the training courses the war-disabled should be at the right end of it. The number of persons who would require training must be uncertain, and he did not want to see the war-disabled kept waiting. Sir IAN FRASER said that one of the factors which had caused an almost unanimous second reading of the Bill was the assurance by the Ministry of Labour that if it proved to be necessary they would, by administrative action, see that ex-Service and war-disabled persons would be first considered. Mr. BEVIN said he made that statement with a view to binding his Department not only during his term of office but in the administration of the Bill permanently. He could carry out the principle better administratively if no limitations were put on him. If members would agree with him that this was an industrial and not a pensions matter, he would agree between now and the report stage to find words to meet their desire and to give effect to the intention and pledge of the Government. If they would agree to the use of words such as "preference for persons who have served" instead of merely "war-disabled," he would be happy to meet them. The amendment was negatived.

Sir IAN FRASER moved an amendment to provide that war-disabled persons should be separately recorded in the register, so that ex-Service men and others to whom it was proposed to give a prior place should be clearly recognized. Mr. TOMLINSON said the Department already had this power, and Mr. Bevin undertook that the war-disabled should be put into proper categories so that they might be recognizable. The amendment was negatived, and the consideration of the Bill was adjourned.

Education Bill

Mr. R. A. BUTLER on Jan. 19 moved the second reading of the Education Bill. He said this Bill completely recast the law as it affected education. The Acts of 1899 and 1921 were repealed. The Bill offered an opportunity to every child to pass through the primary and secondary stages of education, and would give all children over 11 opportunities for making the most of their natural aptitudes. He hoped that from the Bill would arise a healthy development of nursery schools or classes. A complete revision was proposed in the law for dealing with the handicapped child. A duty was to be laid on local education authorities to ascertain all children who, because of disability of mind or body, needed special attention. Mr. Butler proposed to abolish, for educational purposes, certification under the Mental Deficiency Acts. No child who could be dealt with within the education system should in future be described or treated as mentally defective. Only those who could not be educated and those likely to need supervision after leaving school would be appointed to the mental deficiency authorities. Categories of handicapped and backward children, for whom special provisions should be made, would be defined in regulations and not in the Act to enable advantage to be taken of new developments in medical knowledge or in psychological diagnosis and practice. Children with slight disabilities might be taught by special methods adapted to their needs in ordinary primary and secondary schools. For the more seriously disabled he looked for an extended provision of special schools through local authorities and voluntary endeavour. He was taking power to give additional financial help to the latter. One clause of the Bill gave parents the right to ask for medical examination of any child over the age of 2 with the object of securing special educational treatment.

Clause 46

The Bill imposed a duty on authorities to provide meals and milk. The proposal was drawn on broad lines so that it could be adjusted to the Government's future decision on family allowances. Clause 46 proposed that local education authorities should be under an obligation to see that all children attending school or a young people's college maintained by such an authority should be able to obtain free medical attention other than domiciliary treatment. Parents would be under an obligation to submit their children to medical attention. Every effort would be made to enable children to take advantage of modern medical and dental treatment. There was no foundation for the fear that the Bill would deprive local authorities of responsibility for medical treatment and confine the work of the school medical officers to medical inspection. Clause 46 was likely to give school medical officers and staff a greater responsibility for the treatment of children. The Government trusted that with the development of the new national health service the duties of school medical officers would be widened and that the school medical service would become part of the general health services of the nation.

The biggest change would be a regular and careful inspection of boys and girls who had left school and entered employment. At present there was no continuation of the medical service to look after them. Co-operation between the school medical staff and the agencies advising young people on choice of employment and physical welfare in industry was to be centred in the young people's colleges. The Government was keen to re-enact, with modifications, Mr. Fisher's proposals for continuing education. The age range in the young people's colleges would be up to 18 for a school-leaving age which at first was to be 15 and later on 16.

Debate continued on Jan. 20, and the Bill was read a second time.

Regulation 33B

Dr. SUMMERSKILL on Jan. 20 drew attention to the increased incidence of venereal disease in the United Kingdom. She said that Mr. Ernest Brown had refused to take more effective action to reduce this incidence. After six months in which Regulation 33B had been in operation two men had been informed against and 64 women. In addition, 1,780 people had been reported, but by only one person in each case, which meant that 33B did not apply. She was told that the number of new cases in 1942 was 120,000. Any other disease which was a menace to the community was notifiable. Why not this? In Scotland the County Council of Lanarkshire and the burghs in that county had agreed to support a scheme of compulsory notification and treatment. The city of Glasgow was moving in the same direction.

Dr. HADEN GUEST was forced to conclude that the Ministry had not sufficiently stimulated the activities of medical officers of health and other health authorities in this matter. Such officers and authorities were often not particularly interested in prevention of venereal disease. There had been complaints in Allied circles about the numbers of their troops who had been affected in this country, particularly in London. Dr. MORGAN said that in Chicago, when there was compulsory notification and treatment, the figures of the disease went up higher. This had been the case all over America where these measures were tried.

Miss HORSBRUGH, replying to the debate, referred to the Edinburgh Bill, introduced into the House of Commons some years ago, on this subject. What was the best method of getting those affected to go for treatment at the earliest moment? The Ministry had tried to ensure that if people were infected they knew something about the disease and the urgent necessity for treatment at once. If people knew they would have to go to the doctor under a compulsory scheme they would decide to wait because they would not want to be caught up in a compulsory scheme. The Ministry had to let knowledge grow. Without that it would not succeed, whether the country had compulsory notification or not. The figures quoted by Dr. Summerskill were of those who had refused treatment and on whom a notice had then been served. In about half the cases where there had been two notifications the individuals

came forward voluntarily when persuaded. Two names of contacts were required if action was taken compulsorily under 33B, but not otherwise. Difficulty had been experienced by medical officers who were uncertain about the legal aspect. There was an idea that if they interviewed people and asked them whether they were aware they had this disease, there might be subsequent actions for slander or defamation of character. Local authorities had been told that if they instructed the medical officer of health to take such action he was protected.

Advisory Committee on Domestic Labour

Mrs. CAZALET KEIR on Jan. 20 asked the Minister of Labour about the progress of his plans for supplying domestic labour to hospitals and other similar services. Mr. ERNEST BEVIN said he found it necessary to give first priority to domestic work in connexion with the care of the sick and wounded, the old and infirm, and young children. He was instructing local offices to pay special attention to the filling of vacancies in this work. An advisory committee had now been formed, under the chairmanship of Mr. McCorquodale, and had held its first meeting.

[This Standing Advisory Committee on Institutional Domestic Employment includes one medical member—Dr. F. Hall, County Medical Officer of Health, Lancashire.]

Availability of Quinine in Bengal

Sir ARCHIBALD SOUTHBY inquired on Dec. 20 whether adequate stocks of quinine existed in Bengal, and whether it was possible for the public to buy quinine.

Mr. AMERY replied that large quantities of quinine had throughout been available to the Government of Bengal, but until the middle of November the arrangements for its distribution inside the Province were unsatisfactory. These had been improved. Distribution in the famine areas was mainly free through hospitals, doctors, and the military relief organization. Sale to the public was controlled at Rs. 37 per lb., but local shortages had driven trade stocks underground and black market prices were much higher.

Decisions of Medical Boards

On Jan. 25 Mr. TOMLINSON, replying to Mr. Kirby, said that there was no provision for appeals against the decisions of medical boards. If, however, medical evidence was produced which suggested that there was some room for doubt regarding the correctness of a man's grading, the case was considered by a medical officer of the Ministry of Labour, and where appropriate the man was re-examined. Moreover, men directed to enrol in the Home Guard had a statutory right to appeal against the direction to a local appeal board, which, if of opinion that the man should be medically re-examined, must recommend withdrawal of the direction with a view to such re-examination.

Typhus in Naples

Sir JAMES GRIGG on Jan. 25 informed Mr. G. Strauss that the typhus epidemic in Naples was confined to the civilian population, among whom the incidence had steadily increased since the summer. Control of the epidemic was in the hands of the Deputy Chief Civil Affairs Officer and the United States Typhus Commission. Mass disinfestation and the inoculation of key personnel had been organized.

The Nation's Milk Distribution

In the House of Commons on Jan. 25 Colonel LLEWELLIN made an explanatory statement on the new Defence Regulation 55G, which imposes restrictions on the sale of raw milk in certain areas. He said that the policy of the Government on measures to improve the quality of the nation's milk supply was set out in a White Paper published last July. This regulation carried out that policy in so far as it was concerned with the control of the classes of milk sold in certain areas. The need for this control was fully explained in the White Paper. The regulation prohibited the sale of milk by retail in areas to be specified in Orders to be made by him unless it was T.T. milk and, in Scotland, certified milk; accredited milk and, in Scotland, standard milk, so long as in both these cases they were derived from a single herd; or heat-treated, pasteurized, or sterilized milk. The areas which would be specified were those in which a rationalization scheme was in force for economizing the use of men and vehicles, and thereby having the effect of restricting consumers in the choice of their dairymen. No area would be specified until he was satisfied that facilities existed for supplying adequate quantities of heat-treated milk to meet the requirements of the area.

Mental Hospitals in Scotland.—On Jan. 18 Major LLOYD asked the Secretary of State for Scotland whether he was aware that the status and administration of the Royal mental hospitals were not considered by the Hetherington Committee, although these hospitals were an integral part of the health services in Scotland. Mr. JOHNSTON said he was informed that, in refraining from making recommendations based on the evidence which they received on the subject of the Royal mental hospitals, the committee had in mind that the mental hospital service rested on a special code of law which was at present being reviewed by the Russell Committee on the Lunacy and Mental Deficiency Laws of Scotland. The position of the Royal mental hospitals in relation to the proposed new health service was not being overlooked.

Diet of Miners.—Sir E. GRAHAM-LITTLE on Jan. 18 asked the Minister of Food whether he would institute an inquiry into the diet of miners and other sections of the community engaged in hard physical labour, as there was evidence that a deficiency in energy-producing items of diet accounted for much of the absenteeism now impeding the production of coal and other vital war efforts. Mr. MABANE replied that the nutritional requirements of every class of consumer were under constant review by his Department, and special attention was now being given to the needs of the types of workers referred to.

The Services

The *London Gazette* has announced the award of the M.C. to Fl. Lieut. R. J. L. Ferris, R.A.F. The announcement reads as follows:

Fl. Lieut. Ferris, the medical officer of No. 74 Squadron, has displayed outstanding gallantry and devotion to duty. During a period in October, 1943, his headquarters was subjected to severe enemy air attacks. On one occasion four men were killed and two others were buried under the debris. Fl. Lieut. Ferris immediately set to work removing the bodies and releasing the buried men. His medical equipment had been destroyed and he was compelled to work with a pair of scissors and a small wood-saw, with which he succeeded in releasing one man after amputating his leg. Fl. Lieut. Ferris accomplished this while the air attack was in progress and worked with very little light and while held upside down by his legs. During an engagement between British and enemy ground forces he treated military and civilian casualties alike. Fl. Lieut. Ferris worked incessantly under most rigorous conditions. His coolness and courage proved a source of inspiration to all.

The Efficiency Decoration has been conferred upon the following officers of the Territorial Army: Col. H. A. B. Whitelocke, late R.A.M.C.; Lieut.-Col. (temp. Col.) W. H. Marston; Lieut.-Cols. T. F. Arnott, O.B.E., and S. J. Hartfall; Majors (temp. Lieut.-Cols.) J. A. Bruce and F. Heywood-Jones; and Majors H. W. Davies, L. F. Jeffcoat (T.A.R.O.), C. R. L'E. Orme, and L. F. Richmond, R.A.M.C.

The following have been mentioned in dispatches by Air Officer Commanding-in-Chief:

Gp. Capt. J. K. R. Landells; Gp. Capts. (Acting) A. Harvey, C. J. S. O'Malley; Wing Cmdrs. T. J. X. Canton, L. E. A. Dearberg, G. A. M. Knight, J. W. Patrick, C. E. G. Wickham; Wing Cmdrs. (Acting) H. H. S. Brown, R. C. Jackson, J. H. L. Newnham; Wing Cmdr. (Acting) E. B. Harvey, R.A.F.O.; Squad. Ldrs. W. Hargrave-Wilson, A. L. Knipe, M. L. Maley, S. Rogers, A. S. Simpson, D. Turner, J. L. W. Walls, R.A.F.V.R.; Squad. Ldrs. (Acting) B. L. Bickford, E. R. Brown, I. W. H. R. Cran, C. F. Hamilton-Turner, W. L. Hector, R. N. Houlding, D. A. Ker, H. J. Lillie, P. J. O'Connor, J. E. Smith, D. Stafford-Clark, M. W. L. White, R.A.F.V.R.; Fl. Lieuts. T. G. Band, A. J. Chiappa-Sinclair, P. L. Bryce-Curtis, R. C. Dickson, R. E. Glennie, C. M. Liddell, A. D. MacLean, A. F. Pearson, T. Primrose, O. H. Sennett, J. A. Sutton, H. M. Urquhart, R.A.F.V.R.; Squad. Officer (Acting) A. L. Dovey, W.A.A.F.

CASUALTIES IN THE MEDICAL SERVICES

Killed in action.—Capt. J. F. V. Lart, R.A.M.C.
Reported missing.—Surg. Cmdr. H. de B. Kempthorne, R.N.
Killed.—War Subs. Capt. D. W. Forgan, R.A.M.C.

Universities and Colleges

UNIVERSITY OF EDINBURGH

At a graduation ceremonial on Jan. 22 the following medical degrees were conferred:

M.D.—T. G. Brown, Christina M'D. M'Taggart.
PH.D.—(In the Faculty of Medicine): F. Alexander.
M.B., CH.B.—P. Aitken, *C. A. Barrett, E. Bindman, T. F. Boyle, D. Cameron, J. A. Campbell, T. I. Crichton, T. G. Crombie, A. W. Cunningham, J. N. Dobson, T. E. Donaldson, K. Drummond, W. A. Esselmont, J. Elkin, W. H. Elliott, S. J. Evans, J. W. Farquhar, D. H. Forster, G. F. Hawkins, A. G. Henderson, D. W. D. Hendry, J. M. Herd, J. M. Kerr, D. K. Kouyoumdjian, C.-E. Lim, J. W. F. Lumsden, H. F. Lyall, *R. J. M. M'Cormack, G. D. M'Donald, A. H. M'Kerrow, R. S. M'Neil, J. H. Macpherson, D. MacVicar, J. D. Malloch, J. S. Milne, J. F. O. Mitchell, R. G. Mitchell, T. R. Nelson, J. A. Paterson, R. M'C. Paterson, *Pinkerton, R. R. Pratt, K. Rhaney, *I. M. Richardson, Jessie R. Robinson (*née* M'Laren), G. J. Romanes, R. S. Ross, J. T. R. Russell, Isabella M. Scott, J. H. Scott, B. M'L. Shiels, E. S. Shoucair, Catherine M. G. Smith, Margaret S. Stevenson, R. C. F. Todman, *P. R. Walbaum, J. H. Walmsley, I. Wang, Elizabeth Whalley, W. E. J. Wilson, G. D. Wright.

*With honours.

EPIDEMIOLOGICAL NOTES

Discussion of Table

In *England and Wales* during the week the notifications of whooping-cough rose by 230, but those of acute pneumonia dropped by 314. There were 44 fewer cases of scarlet fever and 28 fewer of cerebrospinal fever. Notifications of measles went up by 44.

There were 197 deaths from influenza in the great towns, a fall of 58. For the week ending Jan. 22 the influenza deaths numbered 143. Almost one-third, 61 deaths, were recorded in the Greater London area, although only 19 were registered in the administrative county of London.

The only large variation in the county totals for whooping-cough was an increase in Essex of 40. The lower incidence of scarlet fever was due to the northern counties; in the south there was a tendency to a higher incidence. The only feature of note in the trend of measles was the small but continuous rise in London from 36 to 98 in the past three weeks. The decline in the notifications of pneumonia was general throughout the country, except in the north midland region, where there was a slight rise.

Dysentery notifications were 10 more than in the preceding week. The largest returns were London 34, Islington 18; Lancashire 38, Manchester C.B. 29; Sussex 27, Chichester R.D. 14, Bognor Regis U.D. 9; Essex 13, Rochford R.D. 10.

In *Scotland* notifications of measles and whooping-cough rose respectively from 43 to 207 and from 121 to 252. Notifications of acute primary pneumonia dropped by 159 and those of diphtheria by 21. The rise in measles was due to two towns, Glasgow and Paisley, where increases of 104 and 59 were recorded. Glasgow, with a rise of 108, was the only centre with a large increase in the notifications of whooping-cough. One case of typhus was reported from Ayr county.

In *Eire* there was a decline in most infectious diseases, but the incidence remained unchanged in Dublin C.B.: 85% of the total notifications of measles, one-half of whooping-cough, and more than one-quarter of diphtheria were reported in this city.

In *Northern Ireland* the notifications of diphtheria rose from 32 to 51.

Week Ending January 22

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 2,110, whooping-cough 2,215, diphtheria 712, measles 661, acute pneumonia 1,122, cerebrospinal fever 70, dysentery 148, paratyphoid 2, typhoid 2. Influenza deaths in the great towns numbered 143.

Points from Abroad

The epidemic of typhus in Naples, which has so far been confined to civilians, has reached such proportions that it constitutes a potential menace to the military effort in Italy. A six-point programme has been put into operation by the American Typhus Commission. Disinfestation stations have been established, where as many as 70,000 civilians are treated each day. A vigorous search has been made for all possible cases. Immunization by serum has been organized. The outbreak began under German occupation, and has increased as a result of overcrowding and lack of adequate facilities to deal with the thousands of refugees, and of the demolition of the water and gas supplies by the Germans.

It is reported from Berlin that the incidence of stillbirths has risen from 2.8% in 1942 to 5.1% in 1943.

The following figures are quoted from *Wirtschaft und Statistiks*. The number of births in 1943 was 995,744 in Germany and the incorporated territories. Deaths (civilians only) amounted to 725,257. There were 42,000 fewer children born than in 1942. In the period 1940–3 the deficit of births compared with the position in 1939 was 892,000, whereas in the years 1915–18 it was roughly 3,000,000. There were 20,700 fewer deaths among the civilian population in Germany than in 1942.

It is reported from Berne that in France the high mortality of children constitutes a difficult problem for the Vichy Government. The number of deaths exceeded the number of births in 1942 by 93,626, as compared with 55,758 in 1938.

According to statistics compiled by Dr. Veld, Medical Inspector for National Health in South Holland, the number of diphtheria cases confirmed in 1938, 1939, 1940, 1941, and 1942 amounted to 1,272, 1,273, 1,732, 5,452, and 19,417 respectively. In 1943 up to and including Oct. 31 there were 40,336 cases.

No. 2

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended Jan. 15.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and o Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1944					1943 (Corresponding Week)				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	64	4	19	1	5	96	8	24	4	3
Deaths		3	1				2	1		
Diphtheria	673	41	158	106	51	764	45	231	97	31
Deaths	16	1	2	3	—	27	—	2	6	1
Dysentery	175	34	39	—	—	96	18	31	—	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	1	—	1	—	—	2	—	—	—	—
Deaths		2					—			
Erysipelas			43	12	1		—	55	11	3
Deaths		1					—			
Infective enteritis or diarrhoea under 2 years				9					23	
Deaths	61	13	10	14	7	41	3	11	17	4
Measles	559	98	207	71	2	12,323	630	377	18	34
Deaths	—	—	—	—	—	16	—	3	—	1
Ophthalmia neonatorum	78	8	14	—	1	87	2	18	—	—
Deaths										
Paratyphoid fever	4	—	—	—	—	5	—	—	—	
Deaths	—	—	—	—	—	1	—	—	—	1
Pneumonia, influenzal*	1,294	105	50	25	6	1,194	73	12	9	3
Deaths (from influenza)	197	19	12	3	11	89	4	2	1	—
Pneumonia, primary			357	18				276	13	
Deaths		79		21	6		—		12	8
Polio-encephalitis, acute	—	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	9	2	1	1	1	8	1	—	8	3
Deaths		—					—			
Puerperal fever		2	12		—		5	15		—
Deaths										
Puerperal pyrexia†	152	12	13	2	1	159	10	15	—	3
Deaths		—					—			
Relapsing fever	—	—			—					
Deaths										
Scarlet fever	1,747	146	229	29	92	1,957	158	339	57	52
Deaths	2	—	—	—	—	—	—	1	—	—
Smallpox	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	1	—	2	1	3	4	—	1	3	—
Deaths	1	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	1	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough	2,023	184	252	52	12	1,504	112	124	45	8
Deaths	14	1	1	—	1	10	—	2	3	1
Deaths (0–1 year)	437	79	70	57	25	454	43	74	50	19
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	5,715	975	739	292	170	6,003	857	696	261	150
Annual death rate (per 1,000 persons living)			17·0	19·1	‡			15·7	17·2	‡
Live births	6,363	749	883	379	251	6,519	804	910	393	286
Annual rate per 1,000 persons living			18·0	24·7	‡			18·6	25·8	‡
Stillbirths	195	14	39			238	28	43		
Rate per 1,000 total births (including stillborn)			42					45		

* Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

† Includes puerperal fever for England and Wales and Eire.

‡ Owing to evacuation schemes and other movements of population, birth and death rates for Northern Ireland are no longer available.

Medical News

The British Association of Physical Medicine is meeting at 11, Chandos Street, London, W.1, to-day, Saturday, Feb. 5, at 2.30 p.m., to discuss the objects of the Association under the heading "The Place of Physical Medicine in Teaching and in Practice." Several short papers will be read before the discussion takes place.

A meeting of the Clinical Society of the Royal Eye Hospital will be held at the hospital, St. George's Circus, Southwark, S.E.1, on Friday, Feb. 18, at 4.30 p.m., when a talk will be given by Dr. Francis E. Preston on "Ophthalmic Prescribing and Therapeutics."

A meeting of the London Association of the Medical Women's Federation will be held in the Common Room of B.M.A. House on Saturday, Feb. 19, at 3 p.m., when Miss Jean Dollar, F.R.C.S., D.O.M.S., will speak on sulphonamides in ophthalmology.

A Chadwick Public Lecture will be given on Tuesday, Feb. 22, at 2.30 p.m., at the Royal Society of Tropical Medicine and Hygiene, 26, Portland Place, W., by Mr. C. E. A. Bedwell on "The Place of the Hospital in the Health Service." The lectures for the spring programme, 1944, will deal generally with public health matters and the war. Admission is free.

The meeting of the Nutrition Panel of the Society of Chemical Industry will be held at Burlington House, Piccadilly, W., and not at 56, Victoria Street, Westminster, S.W., as stated in the issue of Jan. 29 (p. 169).

It is announced that Prof. H. W. Florey, F.R.S., has left England for Russia to pass on to Soviet doctors his knowledge of penicillin as a therapeutic agent. Prof. Florey returned recently from the Middle East to present to the War Office and the Medical Research Council a detailed report on the use of penicillin in war wounds. (See *Journal*, Dec. 11, 1943, pp. 750 and 755.)

A Turkish medical mission has arrived in this country to study medicine and surgery in wartime, under the auspices of the British Council. Its members have been nominated by the Turkish Ministry of Health; Dr. Hüseyin Avni Aksel has for the past 10 years worked at the Haseki Hospital, Istanbul, where he is now chief surgeon, and has lately taken special interest in surgery of the lung. Prof. Burhanettin Tugan was appointed in 1928 professor of clinical chemistry at the Gülhane Military Medical School, and still holds that post. As a lieutenant-colonel in the Turkish Army he is a member of the Military Medical Academy, and he is also a member of the Turkish Medical Council. He represented Turkey at the 9th and 10th International Congresses of Military Medicine. Dr. Bekir Nimetullah Taskiran was chief assistant in the surgical clinic of the Faculty of Medicine, Istanbul, and has just been appointed chief surgeon at the Ankara Model Hospital. A small reception was given in their honour.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, LONDON, W.C.1.

ORIGINAL ARTICLES AND LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

Authors desiring REPRINTS should communicate with the Secretary of the Journal Board, B.M.A. House, Tavistock Square, W.C.1, on receipt of proofs. Authors over-seas should indicate on MSS. if reprints are required, as proofs are not sent abroad.

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TELEGRAPHIC ADDRESSES.—EDITOR, *Aitiology Westcent, London*; SECRETARY, *Medisecra Westcent, London*. ADVERTISEMENTS, *Articulate Westcent, London*.

B.M.A. SCOTTISH OFFICE: 7, Drumsheugh Gardens, Edinburgh.

ANY QUESTIONS?

Degeneration of Pyramidal Tract

Q.—*A man aged 60 years, who has suffered for many years from a familial form of degeneration of the pyramidal tract, at first thought to be a primary lateral sclerosis, has for the last ten years suffered from rheumatoid pains in joints and muscles. These pains are at times very severe and disabling. Ordinary analgesics are useless. Is any form of light treatment likely to be of use, or drugs?*

A.—The data are insufficient to form an opinion in this case; it is not clear what is meant by "rheumatoid" pains in joints and muscles. It would seem probable that the pains originate in the spinal centres unless there are local changes. It is very unlikely that any form of light treatment would help. Short-wave diathermy in skilled hands would be worth a trial, but haphazard application would be futile. The only drugs likely to be of service are analgesics. Has pethidine been tried? Potassium iodide might also be indicated.

Intestinal Flatuence

Q.—*What are the causes of intestinal flatulence, offensive and inoffensive, but such as to give rise to abdominal discomfort? I can find no authoritative analysis of the gases produced in the intestine. What are they? Where such production is excessive what medicinal and dietetic measures should be taken to remedy the state of affairs?*

A.—The commonest cause of intestinal flatulence is intestinal carbohydrate dyspepsia. Starch in its natural cellulose envelope is insufficiently digested in the small intestine and consequently undergoes fermentation in the colon. The gases produced—mainly carbon dioxide and methane—are odourless, but may cause much discomfort by the distension they cause. In severe cases the organic acids produced irritate the colon sufficiently to cause diarrhoea. The flatulence can be overcome by a diet containing no starch in its natural form—i.e., no potatoes or other root vegetables, and no rice, sago, or tapioca. Bread and puddings made from prepared starch are allowed in moderation, and there is no need to restrict sugar.

Much less often flatulence results from putrefaction of proteins which have escaped digestion in the small intestine. The quantity of gas produced is comparatively small, but it is very offensive. Diarrhoea is often present. The commonest cause is excessive indulgence in purgatives, and it may even result from taking too much paraffin. It does not result from deficient peptic digestion in achlorhydria, but is a common result of the deficient secretion of trypsin caused by carcinoma of the pancreas. In the absence of the latter the production of offensive gas can generally be prevented by avoiding aperients. In any case a dessertspoonful of powdered charcoal three times a day will deodorize offensive intestinal evacuations.

Enuresis in Childhood and Adolescence

Q.—*What investigations are necessary to discover the causes of enuresis, and what treatments might be tried before sending the child to join the child guidance waiting list.*

Q.—*A boy of 17 has been troubled with enuresis for years. Atropine, belladonna, etc., have no curative effect. Would complete hypnotic treatment be likely to cure, and how long would a course take? At present the boy and a younger brother have a bedroom to themselves in a "public school," but he may be leaving school in a few months, and he fears this trouble being a handicap to him in life. The profession, I was told, object to hypnotic treatment (and the school doctor refused to try it, trusting to time as a cure). Why this objection? It seems to me unreasonable.*

A.—Habitual enuresis, apart from rare instances in which organic factors can be discovered, is a psychogenic disorder. The organic factors to be excluded are: disease of the urinary tract; disease of the C.N.S., especially nocturnal epilepsy, petit mal, and spina bifida; diabetes mellitus and insipidus. Severe mental defect must also be listed.

This done, attention must be focused on the psychological background of the patient—usually a child. Enuresis, like other psychoneurotic symptoms, is an expression of mental protest. It means usually the unconscious assertion or reassertion of claims to irresponsible babyhood. Such a lapse into infantile modes of behaviour is most frequently due to lack of the sense of security in the child's relationships with its world. This may be caused by illness; by negligent, spoiling, or nervous parents, too unsure of themselves to apply healthy discipline and to encourage development towards maturity, or else making too severe demands. In such cases enuresis is a symptom of persistent dependence, and in a sense a due reward of the parental attitude. More often, however, enuresis appears, after a period of normal control, when the child's sense of security is threatened by a change in its habitual environment. The death of a loved person; the birth of a baby, displacing the patient from accustomed priority; the onset of school life, making extra demands on him, especially if he is intellectually handicapped—are common factors. In wartime the loss of security through evacuation to not always congenial strange foster-parents and through the break-up of the child's familiar world is a typical situation precipitating the regression to loss of bladder control. In the child's mind enuresis may mean aggressive, dependent, or self-gratifying impulses—most likely all three. The vicious circle is completed through guilt and inferiority feelings.

Investigations into the history and present conditions of the child's emotional development are therefore necessary. Much can be done by the understanding doctor with time to spare for a long exploratory talk with the parents, school teachers, etc., as well as with the patient. In brief, treatment must aim at eliminating causes for feeling unloved, wanting to seek safety, at removal of guilt feelings and discouragement, and at the reward of progress in control. There is no sense in giving medicines or prescribing fluid-intake regimes, as these further cloud the issue and make the child and its guardians take a wrong view of the condition. Many cases may respond quickly to quite simple encouragement and interest in helping them. For the rest, the child

guidance clinic, with or without waiting list, exists to cope with the quite involved social problems such cases sometimes present, in which the child is but a pawn demanding consideration through nuisance value.

The inquirer's attention is drawn to the relevant and wise letter by Dr. Herbert W. Bland in the *Journal* of Jan. 15 (p. 93).

The school doctor in the second case was probably wise to refuse to "try hypnosis." Objection to hypnosis springs from two rather different motives. One is an unreasoned prejudice against this method altogether; the other is an informed assessment of its value in this type of case. Most of what has been said above in regard to causation holds good also for the stresses of adolescence. Hypnotic suggestion in the hands of the trained psychiatrist may possibly be the final method of choice. But it must be preceded by diagnosis of the conflicts and maladjustments of the patient, of which enuresis is the outward and visible sign. The school doctor's objection, on the face of it, might have been based on the first of these objections, as his optimism with regard to "time as a cure" is not often borne out by the after-history, and he suggested nothing positive. The case would seem to be eminently suitable for investigation by an "expert," as otherwise the patient's own fears may indeed be justified. Psychopathology has reached a stage of development when blind empiricism in therapy is as little justified here as in any other branch of medicine. The tempting use of the magic of hypnosis will not necessarily have done anything to alter the balance of mental forces of which the enuresis was the outcome, and which, rather than the symptom, is the essence of the patient's disability. The reasonable objection to the employment of hypnosis is, therefore, analogous to our preference for finding out why somebody is weeping rather than for plugging his lacrimal ducts.

Rectal Paraldehyde during Labour

Q.—*Further to your reply to the question on analgesia in labour in the* JOURNAL *of Jan. 1, p. 30, I should be glad to have details of the technique of the administration of rectal paraldehyde during labour and to know what risks are associated with this treatment.*

A.—A safe maximum dosage is based on 1 drachm of paraldehyde per stone of body weight. In actual practice 6 drachms of paraldehyde gives good results in all but the biggest and heaviest of patients. It is conveniently made up in 4 oz. of saline or olive oil when this is procurable. Following the administration of an enema early in the first stage the paraldehyde is slowly injected into the rectum, preferably taking 10 to 15 minutes over the process. It is an excellent basal anaesthetic, is not associated with any risk to either the patient or the child, the only danger being over-dosage —namely, giving ounces instead of drachms. For this reason a careful check is essential before the administration of the drug. In cases in which the vertex is deep in the pelvis a soft catheter should be inserted per rectum above the level of the head. Otherwise the paraldehyde is liable to be returned.

Tonic Action of Strychnine

Q.—*I should welcome an authoritative statement on the action of strychnine as administered in ordinary therapeutic doses. (1) Do the ordinary nux vomica mixtures have any "tonic" action in, for example, cases of post-influenzal debility, or is the action of such mixtures little more than that of a stomachic? (2) What are the modern views on the value of strychnine as an emergency injection in such conditions as pneumonia and heart failure?*

A.—1. Strychnine in ordinary therapeutic doses undoubtedly has tonic actions apart from its action as a stomachic. It can be shown, for example, that it causes a measurable increase in the field of vision, and there is no reason to doubt its value as a general tonic.

2. Strychnine is not of much value in an emergency. It does not stimulate the heart, and acts on the respiratory and vasomotor centres only when given in convulsive doses. Other drugs, such as nikethamide or leptazol, have more action on these centres and may thus indirectly revive a failing heart.

Marginal Gingivitis in School Children

Q.—*What advice or treatment should be given for the minor degrees of marginal gingivitis so commonly seen in school children? In some cases it is associated with, in others independent of, irregularity. The worst degrees are commonly in the upper or lower incisor region.*

A.—Any state of ill-health or lowered resistance will increase the liability to a marginal gingivitis, but the local factor is a stagnation of saliva and food debris. It is essential, therefore, that in the treatment of the condition inquiries should be made into the habits of the child and stress laid on the absolute necessity for proper "tooth-brush drill." The teeth and gum margins must be cleaned night and morning, after every meal, and indeed after every sweet or glass of milk. Mouth washes help, and chewing gum, if procurable, is excellent as it not only cleanses and massages the gums but stimulates the flow of saliva and reduces the craving for sticky sweets. A common-sense routine will clear up almost every mild case in a few days, but attention must also be paid to any tendency to mouth-breathing, especially during sleep, which is probably the commonest cause of an anterior gingivitis. The aid of the dental surgeon must be sought if any tender tooth is present, causing the child to masticate on only one side of the mouth. Any overcrowding of the mouth is better treated by judicious extractions than by any form of orthodontic appliance. Local treatment, when necessary, will be undertaken by the dentist, but the doctor should satisfy himself that the proper hygiene is carried out at home and that the child has no deficiency in vitamins.

Transport of Cases of Fractured Spine

Q.—*There seem to be conflicting opinions about the first-aid measures to be adopted in suspected cases of fractured spine. How, for example, should a man found lying prone in the street be moved on to a stretcher if thought (a) to have a broken neck, and (b) to have a broken back? An authoritative answer to this question would assist many G.P.s who are now giving lectures on first aid.*

A.—Patients with suspected spinal fractures should be shifted and moved in such a way as not to be folded either backwards or forwards. The patient should be disturbed as little as possible, being transported "as he lies." From the point of view of the spinal injury, no matter at what level, there is no indication for change of position from face to back or vice versa.

Hereditary Factor in Psoriasis

Q.—*What part does heredity play in psoriasis? My experience has been that it does not play as important a part as textbooks would lead one to believe. What are the possibilities of the condition being transmitted if it only develops in early adult life as isolated patches on the scalp, apart from one small chronic patch on the leg since childhood?*

A.—There would seem to be no doubt that psoriasis is transmissible from one generation to another, and that it may occur in several members of a family. Cockayne in his monograph, *Inherited Abnormalities of the Skin*, comments upon the paucity of the published pedigrees. Expressed in percentages the family incidence as recorded by various observers, quoted by Cockayne, varies from 15 to as high as 63%. This second figure hardly accords with the experience of dermatologists in Great Britain. The chance of transmission is unlikely to be modified because the disease has developed in early adult life and in a limited form.

Treatment of Leucorrhoea

Q.—*What is the treatment of leucorrhoea, often met with in school-girls, especially of the poorer classes?*

A.—Leucorrhoea is taken to mean an increase in the normal discharges and not a purulent discharge due to infection. Such an increase at puberty is physiological and temporary, tending to resolve spontaneously. Apart from this, troublesome leucorrhoea in young girls is usually associated with general debility (as after serious illness), malnutrition, lack of cleanliness, sedentary habits, and constipation. Occasionally an erosion of the cervix may be the cause. Treatment should therefore be on general lines—attention to cleanliness, regular exercise out of doors, adequate diet, general tonics, haematinics if there is anaemia. Saline aperients and daily cold baths or contrast baths may help.

Local treatment should be avoided if possible in young girls. As a last resort, astringent douches such as 1% alum can be used, or an erosion of the cervix cauterized.

Quality of Breast Milk

Q.—*Can breast milk be deficient in quality while sufficient in quantity in a healthy mother? This question is prompted by the case of a healthy mother with apparently ample milk and a healthy baby of six weeks who appears to be satisfied with the volume of breast milk after bringing up wind, and yet in 1 to 2 hours wakes up hungry. After a feed of dried milk he rests satisfactorily. His stools are normal usually, but sometimes curdy, and he is gaining weight at the normal rate.*

A.—Minor qualitative variations can of course occur. A mother on a deficient diet probably cannot produce an adequate amount of vitamins in the milk. But as regards the caloric value it is doubtful if this varies much. Workers in India have described how mothers dying of starvation have nevertheless fed babies at the breast who gained in weight. So the obvious deduction from the question is that the child is not getting enough to eat. "Ample milk" is too loose a phrase. Test feeding would settle what was the daily quantity available, but even then the exact requirements of the baby cannot be calculated. A common-sense deduction from the facts as stated is either that the baby is underfed or that he is overfed, getting a pain in his abdomen 1 to 2 hours after a feed which is relieved by a warm feed. If he is gaining weight at the normal rate with the dried milk feed in addition, it suggests that he is actually underfed at the breast.

Influenza Immunization

Q.—*Is it possible to produce active immunity towards epidemic influenza? Is it best to use a "virus suspension" or a vaccine?*

A.—Epidemic influenza is a virus disease, and the reagent used for active immunization must therefore be a preparation of virus. Such virus vaccines, usually in the form of infected mouse-lung suspensions, have been shown to raise the specific antibody content of the blood, but in field trials the method has on the whole given disappointing results in the prevention of the disease. Reasons for this are not far to seek, and two of them are of such weight that it is difficult to see how any considerable improvement on the present position is likely to be achieved. These are:

1. For such immunization to be regularly successful the disease must be caused by a single organism of constant antigenic composition, as in the case of typhoid fever. In influenza this is not so; it has at least three causes: two antigenically different viruses known as A and B, while in some further cases, since neither of these viruses is found, a third agent must be responsible.

2. The immunity produced by a natural attack of the disease may be short-lived: there are well-attested cases in which two attacks due to virus A have occurred in the same season. If the disease itself sometimes immunizes so incompletely, what can be expected of an artificial method?

If the word "vaccine" in the question refers to a bacterial vaccine, the answer is that this can protect only against that form of influenza, if it exists, which has a bacterial cause, or against complications. "Anticatarrh" and "anti-influenza" vaccines usually contain five or six species of bacteria, some of which possess many antigenically distinct types (pneumococcus and *Str. pyogenes*, which have been better studied than the remainder, include about 30 each), and the degree of specific immunity so obtainable against any one organism must be very small. The theoretical unsoundness of this proceeding has a counterpart in the results of carefully controlled trials, which have failed to show that any protection is conferred.

C. diphtheriae in the Vagina

Q.—*What is the treatment for vaginal discharge in a girl of 6 years swabs from which are positive for the Klebs-Loeffler bacillus found to be virulent on animal inoculation? The condition has persisted for over three months. The child was immunized at the age of 4 by two doses of A.P.T. Treatment so far tried has been: (1) reinforcing dose of 0.5 c.cm. A.P.T.; (2) 10,000 units anti-diphtheria serum; (3) painting the vulva daily with antidiphtheria serum; (4) daily baths and swabbing with mild disinfectant. The general condition of the child is very good.*

A.—In view of the obvious difficulty of thorough local examination I would suggest first that the presence of virulent diphtheria bacilli *now* should be confirmed. Diphtheroids of various kinds are not uncommon in the unhealthy vagina, and the original virulent bacilli may have been replaced by a harmless relative. If this is established it is imperative to ensure that the child is Schick-negative. This could reasonably be assumed, but the point should be rechecked, and if she is positive she should be at once given diphtheria prophylactic, preferably A.P.T. Also, the people endangered by direct contact should be Schick-tested and, if positive, protected by immunization. If true diphtheria bacilli are present and the child is Schick-negative, probably toxin from the bacilli plays virtually no part and the bacilli are flourishing "extracorporeally," as in the case of a Schick-negative child carrying virulent bacilli in nasal crusts. It follows that further active immunization, or antitoxin locally or elsewhere, is not called for. Careful local examination by a gynaecologist may reveal some unhealthy focus—e.g., an infected gland or even an endocervicitis where the bacilli harbour and from which they must be routed by appropriate local treament (in which sulphathiazole powder might play a part). Is trichomonas present?

INCOME TAX

Annual Payment under Covenant

E. F. makes annual payments of £240 a year to his step-sister under a covenant, the terms of which are not such as to be void for income-tax purposes. What is the method of obtaining relief?

*** What E. F. has done in effect is to transfer £240 of his income to his step-sister. He should deduct tax at 10s. in the £ from each payment made on account of the annuity. That will give him the relief due to him, but, of course, he must account to the Revenue for the tax so deducted and retained by him. He must accordingly pay tax at 10s. in the £ on £240 of his income, which means that he will have to forgo the earned income relief on such grant of his earnings as have to be used to make up the £240 a year. The step-sister, of course, claims repayment of such part of the tax as may be necessary to give her the allowances she is entitled to—i.e., on £80 personal allowance, £50 child allowance, and at 3s. 6d. in the £ on the balance of £110.

LETTERS, NOTES, ETC.

Umbilical Hernia

Dr. ANN MOWER WHITE (S.E.17) writes: In your reply on umbilical hernia (*Journal*, Dec. 11, p. 771) I was a little surprised to read that "most of these cases, however, can be satisfactorily treated if from the earliest days any attempt at protrusion of the umbilical stump is overcome by padding a penny and using it as a splint. It can be kept in place by adhesive tape or a binder." As this recommendation is contrary to modern practice, I venture to quote from *Clinical Paediatrics*, by Morse (p. 83). "It is useless to try to prevent or cure an umbilical hernia with a pad and tight flannel binder. . . . The best treatment is with a plaster strap. It should be two inches in width; the hernia should be pushed in and then the skin on each side of the navel folded in to act as a splint. The strap should then be applied. . . . It is not advisable to use a coin or button over the navel, under the strap, because although the coin or button may prevent the hernia coming out, it does not favour the closing of the ring in the way the folding of the skin does." Holt and Howland in *Diseases of Infancy and Childhood* (p. 93) also state: ". . . the skin along the line being folded inward so as to overlap the tumour, thus forming a retention pad." From my personal experience I can say that I have treated many hundreds of cases in this way with satisfactory results.

Treatment of Leukaemia

Dr. A. PINEY (London, W.1) writes: The answer to the question about the treatment of leukaemia in the *Journal* of Jan. 22, p. 137, is both incomplete and misleading. Irradiation is not the only method of treating this disease: arsenic is of at least equal value, and in the early stages offers several advantages. Thus, in leukaemia, every therapeutic weapon becomes blunted sooner or later, and it is therefore best to start treatment with the mildest agent; later, irradiation can still be used, but arsenical treatment does little good to patients who have already been irradiated. Arsenic properly administered will reduce the leucocyte count, cause diminution in the size of the spleen, and, in febrile cases, will control the fever. Personal experience has amply demonstrated these facts, but for those who prefer the printed word I would call attention to the paper by E. V. Kandel and D. V. Leroy (*Arch. intern. Med.*, 1937, **60**, 846) and to the monograph by C. E. Forkner (1938). The treatment of the leukaemias has passed almost entirely into the hands of radiologists, much to the detriment of the sufferers. The time to start treatment is when there is deterioration in the blood picture *and* some clinical evidence of increased ill-health. I do not deny that radiologists, entrusted with the treatment of a case of chronic leukaemia, rapidly increase the patient's efficiency. But I do assert that a skilfully treated patient—i.e., one whose treatment is planned according to the stage of the disease—will feel as well and will live a good deal longer.

Infant Feeding

Dr. CATHERINE JAMES (Burgess Hill) writes: I was interested to read the case reported by Dr. Patria Gairdner (Jan. 8, p. 44). One does not know whether to be the more surprised at the heroic measures adopted or at the infant's vitality in surviving it all, but one short tragic phrase at the very outset clearly shows that the whole illness could have been avoided. We read that the breast-feeds of this infant before it was a week old were "complemented with national dried milk." Not long ago a case was reported in your columns of a baby weaned at the third day "because there was no breast milk." When will doctors learn not to interfere with the establishment of the only safe natural method of infant feeding? I should say that only in very exceptional cases should a baby ever be weaned or receive complementary food under the age of two weeks, even if it is losing weight. The vast majority will find, as this unfortunate infant did, that "mother's milk is coming in better" in three or four weeks. I write in the hope that other infants may be spared the tragic sequence—overfeeding, diarrhoea, dehydration, intravenous drip, thrombophlebitis, pyopneumothorax. I note, too, the sound common sense of this child, who from Feb. 1 "resolutely refused bottle feeds; within 24 hours she was for the first time entirely breast-fed. From that time she never looked back."

Dr. ETHEL EMSLIE (London, W.9) writes: The Ministry of Health report on breast-feeding has omitted one detail which, I think, is of importance in the encouragement of breast-feeding. The mother should be told to assume a comfortable position leaning back in a chair with the infant held well up, not flat, in the hollow of her arm. In this position the baby swallows less air, and the mother obtains two and a half or three hours' rest daily. At the present time mothers appear to be taught in hospitals to sit crouched over their babies lying almost flat on their laps. This is very tiring indeed for the mother, especially if she has little chance of resting at any other time, but it appears to be a universal practice. May I also put in a plea for giving complementary feeds, when they are necessary, from a spoon, not a bottle?